

Shri Krishan Chander Government Degree College Poonch

Accredited Grade 'A' by NAAC

AUTONOMOUS (Affiliated to University of Jammu)



Department of Environmental Science

SYLLABUS AND COURSES OF STUDY IN ENVIRONMENT SCIENCE

(For the Examination to be held in 2026, 2027 & 2028)

UNDERGRADUATE COURSE

(FYUGP)

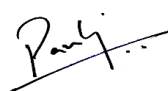
SEMESTER – I, II, III, IV

UNDER NEP-2020

MINUTES OF THE BOARD OF STUDIES MEETING

The Department of Environmental Science, SKC GDC Poonch, convened the meeting of its newly constituted Board of Studies under the Autonomous scheme on 06-07-2026 at 2:30 PM in Online mode. The Chairman welcomed the members and briefed them on the agenda of the meeting. The forum was then opened for individual subject deliberations.

Members Present

S.No.	Name	Designation	Signature
01	Dr. Imtiaz Ahmed	Chairman	
02	Prof./Dr. Piyush Malviya	Subject Expert from University	
03	Prof./Dr. Pankaj Mehta	Subject Expert from University/Govt. Body	
04	Mr. Shanawaz Ahmed	Subject Expert from Industry/Corporate	
05	Ms. Manisha Kanchru	Alumni Member	
06	Dr. Rahil Dutta	Member	
07	Ms. Khalida Parveen	Member	

Agenda

1. Preparation and approval of the Environmental Science curriculum under the Autonomous College framework.
2. Discussion on curriculum structure in accordance with the National Education Policy (NEP 2020) and UGC guidelines.
3. Finalization of course outcomes, learning outcomes, and evaluation scheme.

4. Consideration of value-added, multidisciplinary, and skill-based courses.

Proceedings

The meeting commenced with a welcome address by the Convener, who welcomed all the esteemed members and thanked them for their valuable presence and support. The agenda of the meeting was presented before the Board for discussion.

The Board deliberated extensively on the proposed syllabus and emphasised the need for a contemporary, interdisciplinary, and outcome-based curriculum that caters to the academic and societal needs of students.

Resolutions

After detailed deliberations, the following resolutions were unanimously adopted:

1. The proposed syllabus for the Department of Environmental Science was reviewed and approved with suitable recommendations.
2. The curriculum shall be aligned with the objectives of NEP 2020 and the regulations applicable to autonomous colleges.
3. The Board approved the introduction of:

Value Added Course (VAC) in Environmental Science for students of all disciplines.

Multidisciplinary Course (MDC) to promote interdisciplinary learning.

Skill Course in Environmental Science with emphasis on practical applications, disaster management, environmental monitoring, and sustainable development.

1. The course structure shall incorporate clearly defined Course Outcomes (COs), Programme Outcomes (POs), practical components, field exposure, and continuous assessment.
2. The Board recommended periodic review and revision of the syllabus to keep pace with emerging environmental issues, technological advancements, and national educational priorities.
3. The Board appreciated the efforts made in preparing the draft curriculum and recommended its implementation after obtaining approval from the competent academic authorities.

Vote of Thanks

The meeting concluded with a vote of thanks by the Convener, who expressed sincere gratitude to all the members for their valuable suggestions, constructive deliberations, and wholehearted cooperation in finalizing the syllabus. The meeting ended on a positive note with a commitment to strengthening environmental education through an innovative and quality-driven curriculum.

Details of courses, structure, and syllabus have been added below.



Courses of Study in FYUGP Under NEP-2020

S. No.	Course Type	Course Code	Course Title	Credits	Internal Marks	External Marks	Total Marks
1	VAC (Sem-I, II, III, IV)	UVAEVTH-161,261,361,461	ENVIRONMENT SCIENCE AND EDUCATION	2	10	40	50
2	SEC (Sem-I)	USEEVPR-151	FUNDAMENTALS OF DISASTER MANAGEMENT	1+2 (1 Theory + 2 Practical)	35 (10+25)	40 (15+25)	75 (25+50)
3	SEC (Sem-II)	USEEVPR-251	DISASTER RISK REDUCTION AND PREPAREDNESS	1+2	35 (10+25)	40 (15+25)	75 (25+50)
4	SEC (Sem-III)	USEEVPR-351	DISASTER RESPONSE AND MANAGEMENT TOOLS	1+2	35 (10+25)	40 (15+25)	75 (25+50)
5	SEC (Sem-IV)	USEEVPR-451	INTERNSHIP	2	35 (10+25)	40 (15+25)	75 (25+50)
6	MDC (Sem-I, II, III)	UMDEVTH-141,241,341	ENVIRONMENTAL ISSUES AND SUSTAINABILITY	3	15	60	75

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**S.K.C Govt. Degree College Poonch
(Department of Environmental Science)**

**Syllabus for FYUGP as per NEP-2020
B.Sc./B.A./B.Com. Semester-I/II/III/IV**

**Course Title: Environmental Science and Education
Value Added Course (VAC)
(Examination to be held in 2026, 2027 and 2028)**

Credits: 02

Maximum Marks:50

Mid-Semester Test: 10 Marks

Course Code: UVAEVTH-161

No. of Lectures: 30

End-Semester Exam: 40 Marks

Course Objectives

After completing this course, students will be able to:

- 1. Develop a fundamental understanding of environmental concepts, ecosystem structure and functions, ecological processes, and the significance of environmental education and ethics.*
- 2. Familiarize students with natural resources, their sustainable management, and the causes, impacts, and control measures of major environmental pollution.*
- 3. Enhance awareness of climate change, ecological footprints, carbon footprint, and sustainable waste management practices for promoting environmental responsibility.*
- 4. Introduce students to the concepts of biodiversity, protected area networks, ecotourism, and strategies for biodiversity conservation with special reference to Jammu & Kashmir.*
- 5. Foster environmentally responsible attitudes, critical thinking, and sustainable lifestyle practices that contribute to environmental protection and national sustainable development goals.*

Course Outcomes (COs)

Upon successful completion of this course, the students will be able to:

CO1: *Explain the fundamental concepts of the environment, ecosystem structure and functions, ecological succession, ecosystem services, and environmental ethics.*

CO2: *Classify natural resources and evaluate their sustainable management while identifying the causes, effects, and control measures of air, water, soil pollution, and solid waste.*

CO3: *Describe the scientific basis of climate change, global warming, greenhouse gases, and ecological footprints, and relate them to contemporary environmental challenges.*

CO4: *Analyze the importance of biodiversity, protected area networks, ecotourism, and various conservation approaches for maintaining ecological balance.*

CO5: *Apply principles of environmental stewardship and sustainable living to minimize environmental impacts and promote responsible citizenship at individual and community levels.*

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UNIT 1: UNDERSTANDING THE ENVIRONMENT

- (1.1) Environment: concept, importance and components.
- (1.2) Ecosystem: concept, structure and functions (food chain, food web, ecological pyramids and energy flow).
- (1.3) Ecosystem services: provisioning, regulating, supporting and cultural.
- (1.4) Ecological succession: definition, process and types (Hydrosere and Xerosere).
- (1.5) Concept and Objective: environmental education, environmental ethics.

UNIT 2: NATURAL RESOURCES AND ENVIRONMENTAL POLLUTION

- (2.1) Natural resources: renewable and non-renewable (global status, distribution and production).
- (2.2) Natural resource management: individual, community and government level.
- (2.3) Air, Water and Soil pollution: causes, effects and control.
- (2.4) Solid waste management: collection, segregation, transportation, and disposal.
- (2.5) Climate change concept (Climate, weather, GHGs, Global Warming): causes and consequences.

UNIT 3: ENVIRONMENT AND BIODIVERSITY

- (3.1) Ecological footprints: concept with special emphasis on carbon footprint.
 - (3.2) Contemporary views on the concept of gross net happiness and Aldo Leopold's land ethics.
 - (3.3) Ecotourism: concept of protected area network with special reference to Dachigam National Park and Kishtwar National Park.
 - (3.4) Biodiversity: concept, levels, hot spots and values.
 - (3.5) Threats and conservation of biodiversity.
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Suggested readings:

1. *Asthana, D.K. Text book of Environmental studies. S. Chand publishing.*
2. *Basu, M., Xavier, S.S. Fundamentals of Environmental Studies, Cambridge University Press, India.*
3. *Basu, R.N. (Ed.) Environment. University of Kolkata.*
4. *Barucha, E. Text book of Environmental studies. University Press.*
5. *Miller, T.O. Jr. Environmental Science. Wadsworth Publishing Co.*



6. Wagner, K.D. *Environmental Management*. W.B. Saunders Co. Philadelphia. USA

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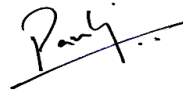
7. Mckinney, M.L. & Schoch, R.M. *Environmental Science Systems & Solutions*. Web enhanced edition 639p

SCHEME OF EXAMINATION

The paper will be of fifty (50) marks, comprising ten (10) marks for the Mid Semester Test and forty (40) marks for the End Semester Examination. The Mid Semester Test will consist of two (2) compulsory short-answer type questions of two and a half (2.5) marks each and one long-answer type question of five (5) marks with internal choice.

The End Semester Examination will be of 2.5 hours and consist of two sections in a question paper with the pattern as follows: 'Section-A' will consist of four (4) short-answer type questions representing all units/syllabi, i.e. at least one question from each unit. Each question shall be of 2.5 marks (All compulsory).

'Section-B' will consist of six (6) long answer type questions (Three to be attempted, one from each unit) representing the whole of the syllabi, i.e. two questions from each unit. Each question shall be worth 10 marks.





**S.K.C Govt. Degree College Poonch
(Department of Environmental Science)**

**Syllabus for FYUGP as per NEP-2020
B.Sc./B.A./B.Com. Semester-I/II/III**

**Course Title: Environmental Issues and Sustainability
Multi-Disciplinary Course (MD)
(Examination to be held in 2026, 2027 and 2028)**

Credits: 03

Maximum Marks:75

Mid-Semester Test: 15 Marks

Course Code:

No. of Lectures: 45

End-Semester Exam: 60 Marks

Course Objectives

Upon successful completion of this course, students will be able to:

- 1. Develop a comprehensive understanding of atmospheric processes, climate change, biodiversity, and major environmental issues.*
- 2. Explain the causes, impacts, and control measures of environmental pollution, waste management, and disaster risk reduction.*
- 3. Understand national and international environmental policies, legislation, governance mechanisms, and the role of institutions in environmental protection.*
- 4. Recognize the importance of environmental ethics, sustainable development, and responsible citizenship.*
- 5. Explore sustainable technologies, green infrastructure, and resource conservation practices for environmental management.*
- 6. Develop analytical and problem-solving skills to address contemporary environmental challenges at local, regional, and global scales.*

Course Outcomes

After successful completion of the course, students will be able to:

CO1. Explain the structure and functioning of the atmosphere, climate system, forest ecosystems, biodiversity, and major environmental challenges.

CO2. Analyse the causes, impacts, and mitigation strategies of environmental pollution, population growth, urbanisation, waste management, and disaster management.

CO3. Interpret the significance of environmental governance, legislation, international environmental agreements, and digital technologies in environmental monitoring.

CO4. Evaluate the role of individuals, governments, NGOs, industries, and communities in environmental conservation and sustainable development.

CO5. Apply the principles of sustainability, resource conservation, green technologies, sustainable agriculture, and green building concepts to promote environmentally responsible practices.

CO6. Demonstrate informed decision-making and environmental stewardship for addressing present and future environmental challenges.

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UNIT-I: ATMOSPHERE & ENVIRONMENTAL ISSUES

- 1.1 Atmosphere & Climate: Structure and composition of atmosphere, Weather and Climate, Climate Change (Greenhouse Effect, GHGs, Global Warming, Causes of climate change, impacts and mitigation measures).
- 1.2 Ozone Layer Depletion and Acid Rain: Causes and environmental impacts, international efforts for protection.
- 1.3 Forest Ecosystems: Types of forests, data, ecosystem services, deforestation, causes, consequences, conservation and sustainable management.
- 1.4 Wildlife & Biodiversity Loss: Causes/Threats, Conservation strategies and Wildlife Protection.

UNIT-II: ENVIRONMENTAL POLLUTION & REGIONAL ENVIRONMENTAL ISSUES

- 2.1 Population growth/explosion, Urbanisation and environmental stress.
- 2.2 Environmental Pollution: Air, water, soil and noise pollution.
- 2.3 Solid Waste Management (Waste segregation, recycling and 5Rs, Circular Economy, Plastic Waste, E-Waste, Biomedical Waste). Desertification, causes, and control measures.
- 2.4 Disaster Management: Natural and anthropogenic disasters, disaster preparedness, risk reduction and response. Disasters' scenario at the global, National and Regional level/Special reference to the Himalayas.

UNIT-III: ENVIRONMENTAL GOVERNANCE AND POLICY

- 3.1 Environmental Education, Literacy, and Ethics. Environmental Governance.
- 3.2 Environmental Governance at International Level: UNEP, Stockholm Conference, Rio Summit, Kyoto Protocol, Paris Agreement, UNFCCC.
- 3.3 Environmental Governance and Legislation at the National Level (Environment Protection Act, Water Act, Air Act, Wildlife Protection Act, Forest Conservation Act, Biological Diversity Act). Digital Technologies in Environment Monitoring (ICT, AI, GIS, Remote Sensing, Mobile Apps, and Social Media).
- 3.4 Role of NGOs, Environmental Movements and Corporate Sector (CER, CSR) in environmental protection and governance.

UNIT-IV: SUSTAINABILITY

- 4.1 Concept of Sustainability and Sustainable Development (MDGs, SDGs).
 - 4.2 Role of Individuals and Society in Achieving Sustainability: Sustainable lifestyles, Resource and energy conservation.
 - 4.3 Sustainable Agriculture and Green Technologies: Organic farming, natural farming, Urban agriculture, hydroponics and green technologies.
 - 4.4 Green Buildings, GRIHA ratings, Carbon Footprint, Carbon reduction and Swachh Bharat Mission.
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SUGGESTED READINGS

1. Agarwal, K. C. (1999). *Environmental Biology. Agro Botanica*.
2. Chapman, J. L. and Reiss, M. J. (1995). *Ecology - Principles and Applications*, Cambridge University Press.
3. Dash, M. C. (2001). *Fundamentals of Ecology*. Tata McGraw-Hill Publishing Co.
4. Kormondy, E. J. (1996). *Concepts of Ecology*. Prentice Hall of India.
5. Odum, E. P. (1971). *Fundamentals of Ecology*. W.B. Saunders Co.
6. Ricklefs, R. E. and Miller, (1999). *Ecology*. W.H. Freeman and Co.
7. Smith, T. M. and Smith, R. L. (2007). *Elements of Ecology*. Pearson Education.
8. Singh, J.S., Singh, S.P. & Gupta, S.R. (2006). *Ecology, Environment and Resource Conservation*. Anamaya Publications.
9. Sharma, P.D. (2012). *Ecology and Environment*. Rastogi Publications.
10. Barucha, E. (2005). *Text book of Environmental Studies*. University Press India.

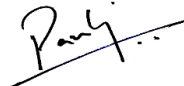
SCHEME OF EXAMINATION

The paper will have seventy-five (75) marks. The breakup for seventy-five (75) marks for the theory paper shall contain fifteen (15) marks for mid semester assessment test and sixty (60) marks for end semester examination.

NOTE FOR PAPER SETTING

Mid-Semester Assessment Test (Total Marks: 15; syllabus to be covered: up to 50%; Time: 1.5 hrs)
Fifteen (15) marks for the theory paper in a subject reserved for mid-semester examination shall have one long answer type question of seven (7) marks and four (4) short answer type questions of 2 marks each.

End Semester Examination (Total Marks: 60; syllabus to be covered: 100%; Time 3 hrs). The question paper will have two (2) sections. Section 'A' will be compulsory, having four (4) questions of three (3) marks each and spread over the entire theory syllabus (one from each unit i.e., Units 1 to 4) and the questions will be short-answer type. Section "B" will have eight (8) long-answer type questions, two (2) questions from each unit. Each question will carry twelve (12) marks. The candidates will be required to answer one (1) question from each unit.





S.K.C Govt. Degree College Poonch (Department of Environmental Science)

Syllabus for FYUGP as per NEP-2020

B.Sc./B.A./B.Com. Semester- I/II/III/IV

Skill Enhancement Course

(Examination to be held in 2026, 2027 and 2028)

Credits: 3 credits in (I, II, III, semester) & 2 Credits in IV semester

**Course Code: USEEVPR-151 (Sem-I), USEEVPR-251 (Sem-II), USEEVPR-351 (Sem-III),
USEEVPR-451 (Sem-IV)**

Maximum Marks in every semester:75 (Theory 25 Marks and Practical 50 Marks)

No. of Lectures: 45

Mid-Semester Test:35

End-Semester Exam:40

Course Objectives

Upon completion of this course, students will be able to:

- 1. Develop a fundamental understanding of disasters, disaster risk, hazards, vulnerabilities, and the disaster management cycle.*
- 2. Build practical skills in disaster preparedness, risk reduction, emergency response, and community resilience through field-based activities.*
- 3. Familiarise students with disaster management institutions, early warning systems, and the role of climate change in disaster occurrence.*
- 4. Train students in basic rescue techniques, first aid, hazard mapping, emergency communication, and the use of modern disaster management tools such as GIS and remote sensing.*
- 5. Encourage community participation, environmental responsibility, and professional competence through internships and real-world disaster management practices.*

Course Outcomes (COs)

After successful completion of the course, students will be able to:

CO1: *Explain the concepts, types, causes, and impacts of disasters, disaster risk, and the disaster management cycle.*

CO2: *Identify local hazards, assess vulnerabilities, prepare hazard maps, and design community-based disaster preparedness and risk reduction plans.*

CO3: *Demonstrate practical skills in first aid, emergency response, evacuation procedures, rescue techniques, and effective communication during disaster situations.*

CO4: *Apply modern disaster management tools, including GIS, remote sensing, early warning systems, and institutional disaster management planning.*

CO5: *Work effectively with government agencies, NGOs, and local communities during disaster preparedness, response, rehabilitation, and internship-based field activities while promoting disaster resilience and sustainable development.*

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S.K.C Govt. Degree College Poonch
Department of Environmental Science

Semester-I

Course: Skill Enhancement Course

Credits: 3 (1 Theory, 2 Practical)

Course Title: Fundamentals of Disaster Management

Course Code: USEEVPR-151

Theory: 1 Credit (25 Marks)

Practical: 2 Credits (50 Marks)

Syllabus

Theory (25 Marks)

- 1.1 Introduction to Disaster Management: Concepts and Definitions.
- 1.2 Types of Disasters: Natural (floods, earthquakes, landslides, cyclones) and Man-made.
- 1.3 Disaster Risk: Hazard, Vulnerability, Exposure, Capacity.
- 1.4 Disaster Management Cycle: Mitigation, Preparedness, Response, Recovery.
- 1.5 Overview of regional, national, and global Disaster Scenario.

Practical (50 Marks)

- 2.1 Identification of local hazards (field survey).
 - 2.2 Preparation of hazard maps (village/town level).
 - 2.3 Case studies of recent disasters in India.
 - 2.4 Mock drills (basic evacuation procedures).
 - 2.5 Awareness poster and campaign design.
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Semester-II

Course: Skill Enhancement Course

Credits: 3 (1 Theory, 2 Practical)

Course Title: Disaster Risk Reduction and Preparedness

Course Code: USEEVPR-251

Theory: 1 Credit (25 Marks)

Practical: 2 Credits (50 Marks)

Syllabus

Theory (50 Marks)

- 1.1 Disaster Risk Reduction (DRR) strategies.
- 1.2 Early Warning Systems.
- 1.3 Climate Change and Disasters.



- 1.4 Role of Institutions: National Disaster Management Authority (NDMA), State Disaster Management Authority (SDMA).
- 1.5 Community-Based Disaster Management (CBDM).

Practical (50 Marks)

- 2.1 Preparation of family and community disaster preparedness plans.
 - 2.2 First aid training (CPR, wound care – basic level).
 - 2.3 Use of emergency kits and safety tools.
 - 2.4 Simulation of early warning dissemination.
 - 2.5 Vulnerability assessment of the local area
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Department of Environmental Science

Semester-III

Course: Skill Enhancement Course

Credits: 3 (1 Theory, 2

Practical)

Course Title: Disaster Response and Management Tools

Course Code: USEEVPR-151

Theory: 1 Credit (25 Marks)
Marks)

Practical: 2 Credits (50

Syllabus

Theory (25 Marks)

- 1.1 Emergency Response Systems. ICT in Disaster Management.
- 1.2 Incident Command System (ICS).
- 1.3 Role of NGOs and Government Agencies.
- 1.4 Post-disaster rehabilitation and reconstruction.
- 1.5 Environmental impacts of disasters.

Practical (50 Marks)

- 2.1 Training in basic rescue techniques.
 - 2.2 Introduction to GIS and remote sensing in disaster management.
 - 2.3 Crowd management and emergency communication.
 - 2.4 Preparation of institutional disaster management plan (college level).
 - 2.5 Field visit to disaster-prone area / relevant agency.
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S.K.C Govt. Degree College Poonch
Department of Environmental Science

Semester-IV

Course: Skill Enhancement Course

Credits: 2 (Practical)

Course Title: Internship

Course Code: USEEVPR-451

Practical: 2 Credits (50 Marks)

Syllabus

Internship Areas

- District Disaster Management Authority (DDMA)
- NGOs working in disaster risk reduction
- Environmental consultancies
- Local administration / municipal bodies

Internship Activities

- Participation in disaster preparedness programs
- Community awareness campaigns
- Data collection and reporting
- Preparation of internship report

Evaluation

- Field performance: 20 Marks
- Internship report: 20 Marks
- Viva voce: 10 Marks

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Suggested Readings

1. Coppola, D. P. (2021). *Introduction to International Disaster Management (4th ed.)*. Butterworth-Heinemann.
2. Carter, W. N. (2008). *Disaster Management: A Disaster Manager's Handbook*. Asian Development Bank.
3. National Institute of Disaster Management (NIDM). (Latest Edition). *Introduction to Disaster Management*. Ministry of Home Affairs, Government of India.
4. National Disaster Management Authority (NDMA). (Latest Edition). *National Disaster Management Guidelines*. Government of India.



5. Keller, E. A., & DeVecchio, D. E. (2019). *Natural Hazards: Earth's Processes as Hazards, Disasters and Catastrophes* (5th ed.). Routledge.
6. Haddow, G., Bullock, J., & Coppola, D. P. (2022). *Introduction to Emergency Management* (7th ed.). Butterworth-Heinemann.
7. Government of India. (2005). *The Disaster Management Act, 2005*. Ministry of Home Affairs, New Delhi.
8. United Nations Office for Disaster Risk Reduction (UNDRR). (2015). *Sendai Framework for Disaster Risk Reduction 2015–2030*. United Nations.
9. National Disaster Management Authority (NDMA). (Latest Edition). *National Disaster Management Plan (NDMP)*. Government of India.
10. Singh, R. B. (Ed.). (2018). *Disaster Risk Reduction: Approaches and Practices*. Springer.

