UTTARAKHAND SANSKRIT UNIVERSITY, HARIDWAR

Syllabus

Post Graduate Diploma in

Environmental Health, Safety and Sustainability

(पर्यावरणीय स्वास्थ्य, सुरक्षा एवं सततता में एक वर्षीय स्नातकोत्तर डिप्लोमा)

(w.e.f. 2026-27)

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Course Structure (2026-27)

Semester	Paper Code	Title of Paper	Credits
I	DSCC 1	Fundamentals of Environment and Ecology (पर्यावरण एवं पारिस्थितिकी के आधारभूत सिद्धांत)	4
	DSCC 2	Occupational Health and Industrial Safety (व्यावसायिक स्वास्थ्य एवं औद्योगिक सुरक्षा)	4
	DSE 1	Environmental Pollution and Management (पर्यावरणीय प्रदूषण एवं प्रबंधन)	4
	DSE 2	Gender, Resources and Environment (लैंगिकता, संसाधन एवं पर्यावरण)	4
	IAPC 1	Research Project/ Dissertation (शोध परियोजना / शोध-प्रबंध)	6
		Semester Total	22
II	DSCC 3	Sustainability and Sustainable Development Goals (सततता एवं सतत विकास लक्ष्य)	4
	DSCC 4	Disaster Management (आपदा प्रबंधन)	4
	DSE 3	Biodiversity and Wildlife Conservation (जैव विविधता एवं वन्यजीव संरक्षण)	4
	DSE 4	Environmental Resources, Policies and Conservation (पर्यावरणीय संसाधन, नीतियाँ एवं संरक्षण)	4
	IAPC 2	Research Project/ Dissertation (शोध परियोजना / शोध-प्रबंध)	6
		Semester Total	22
		Grand Total	44

11/6/26

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Programme Outcome

On successful completion of the programme, students will be able to:

1. Develop a clear understanding of the fundamental concepts of environmental health, safety and sustainability.
2. Explain the major environmental, ecological, occupational health and safety issues and their interrelationships.
3. Understand the causes, impacts and management approaches related to pollution, disasters, biodiversity and natural resources.
4. Develop conceptual clarity regarding environmental policies, laws, conservation approaches and sustainable development frameworks.
5. Understand the social, economic and gender dimensions of environmental issues and their relevance to sustainable development.
6. Explain the principles of occupational safety, disaster management, environmental conservation and pollution management.
7. Develop awareness of national and international environmental policies, conventions, standards and the Sustainable Development Goals.
8. Appreciate the importance of environmental ethics, community participation and responsible environmental behaviour.
9. Develop the ability to critically understand and discuss contemporary environmental challenges from an interdisciplinary perspective.
10. Demonstrate an informed and responsible outlook towards environmental health, safety, conservation and sustainable development.

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Semester I / प्रथम सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	I	Fundamentals of Environment and Ecology (पर्यावरण एवं पारिस्थितिकी के आधारभूत सिद्धांत)	DSCC 1	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand fundamental concepts of environment and ecology.
2. Explain ecosystem structure, functions, and ecological interactions.
3. Analyse population dynamics, energy flow, and ecological cycles.
4. Assess human impacts on ecosystems and environmental stability.
5. Promote environmental responsibility and sustainable practices.

UNIT	CONTENTS
1	Concept, Definition and Scope of Environment / पर्यावरण की अवधारणा, परिभाषा एवं क्षेत्र Components and Functions of Environment: पर्यावरण के घटक एवं कार्य Concept, Definition and Scope of Ecology / पारिस्थितिकी की अवधारणा, परिभाषा एवं क्षेत्र Relationship between Environment and Ecology / पर्यावरण एवं पारिस्थितिकी का पारस्परिक संबंध
2	Ecosystem: Concept, Characteristics and Components / पारितंत्र की अवधारणा एवं घटक Structure and Functions of Ecosystems / पारितंत्र की संरचना एवं कार्य Producers, Consumers and Decomposers / उत्पादक, उपभोक्ता एवं अपघटक Food Chain, Food Web and Ecological Pyramids / खाद्य श्रृंखला, खाद्य जाल एवं पारिस्थितिक पिरामिड
3	Population Ecology: Characteristics and Dynamics / जनसंख्या पारिस्थितिकी : विशेषताएँ एवं गतिशीलता Environmental Carrying Capacity / पर्यावरणीय वहन क्षमता Ecological Interactions: Competition, Predation, Parasitism and Mutualism / पारिस्थितिक अंतःक्रियाएँ: प्रतिस्पर्धा, परभक्षण, परजीविता एवं सहजीविता Ecological Niche and Habitat / पारिस्थितिक निकेत एवं आवास
4	Concept of Energy Flow in Ecosystems / पारितंत्र में ऊर्जा प्रवाह Biogeochemical Cycles / जैव-भूरासायनिक चक्र

	Productivity in Ecosystems / पारितंत्र की उत्पादकता Ecological Balance and Environmental Stability / पारिस्थितिक संतुलन एवं पर्यावरणीय स्थिरता
5	Human Activities and Ecological Disturbances / मानवीय गतिविधियाँ एवं पारिस्थितिक व्यवधान Urbanization, Industrialization and Ecological Change / नगरीकरण, औद्योगीकरण एवं पारिस्थितिक परिवर्तन Ecological Footprint and Environmental Responsibility / पारिस्थितिक पदचिह्न एवं पर्यावरणीय उत्तरदायित्व Ecosystem Services and Human Well-being / पारितंत्र सेवाएँ एवं मानव कल्याण

Suggested Readings:

- Singh, J.S., Singh, S.P. and Gupta, S.R. (2015). Ecology, Environment and Resource Conservation, S. Chand Publishing, New Delhi.
- Chiras, D.D. (2008). Environmental Science. Jones and Bartlett.
- Molles Jr., M.C. (2015). Ecology: Concepts and Applications. Mcgraw Hill.
- Odum, E.P. and Barrett, G.W. (2004). Fundamentals of Ecology. Brooks, Cole.
- Smith, R.L. and Smith, T.M. (2015). Elements of Ecology. Pearson Education India.
- Townsend, C.R., Begon, M. and Harper, J.L. (2008). Essentials of Ecology. John Wiley & Sons.
- Sharma, P.D. (2011). Ecology and Environment. Rastogi Publications.
- Kumar, P. and Mina, U. (2024)., Fundamentals of Ecology and Environment. Pearson and Pathfinder Publication.
- Chiras, D.D. (2008). Environmental Science. Jones and Bartlett.
- Hunter Jr., M.L., Gibbs, J.P. and Popescu, V.D. (2021). Fundamentals of Conservation Biology. Wiley Blackwell Publication.
- Singh, J.S., Singh, S.P. and Gupta, S.R. (2017). Ecology, Environment and Resource Conservation. S. Chand & Company.
- Chapman, J. L. and Reiss, M. J. (1995). Ecology – Principles and Applications. Cambridge University Press

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Semester I / प्रथम सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	II	Occupational Health and Industrial Safety (व्यावसायिक स्वास्थ्य एवं औद्योगिक सुरक्षा)	DSCC 2	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand occupational health and workplace safety principles.
2. Identify workplace hazards and assess associated risks.
3. Apply safety practices, PPE and emergency procedures.
4. Promote workplace health, well-being and safe work practices.
5. Understand occupational safety laws, waste management and ISO 45001:2018.

UNIT	CONTENTS
1	Concept, Scope and Importance of Occupational Health and Safety / व्यावसायिक स्वास्थ्य एवं सुरक्षा की अवधारणा, क्षेत्र एवं महत्व Occupational Health, Safety and Well-being at Workplace / कार्यस्थल पर स्वास्थ्य, सुरक्षा एवं कल्याण Safety Communication, Training and Behaviour-Based Safety/ सुरक्षा संचार, प्रशिक्षण एवं व्यवहार आधारित सुरक्षा Role of Employers and Employees in Workplace Safety / कार्यस्थल सुरक्षा में नियोक्ता एवं कर्मचारी की भूमिका
2	Physical Hazards: Noise, Heat, Vibration and Radiation / भौतिक जोखिम : शोर,ताप, कंपन एवं विकिरण Chemical Hazards: Dust, Fumes, Gases and Toxic Substances / रासायनिक जोखिम : धूलकण, धुआँ, गैसें एवं विषैले पदार्थ Biological Hazards and Occupational Diseases / जैविक जोखिम एवं व्यावसायिक रोग Hazard Identification, Risk Assessment and Control/ खतरे की पहचान, जोखिम मूल्यांकन एवं नियंत्रण
3	Industrial Safety Principles and Practices / औद्योगिक सुरक्षा के सिद्धांत एवं व्यवहार Personal Protective Equipment (PPE) and Its Use / व्यक्तिगत सुरक्षा उपकरण एवं प्रयोग Machine Safety and Safe Work Practices / मशीन सुरक्षा एवं सुरक्षित कार्य प्रणाली Electrical Safety and Fire Safety Management / विद्युत एवं अग्नि सुरक्षा प्रबंधन

4	Occupational Health Problems in Industries / उद्योगों में व्यावसायिक स्वास्थ्य समस्याएँ Occupational Stress and Mental Health / कार्यस्थल तनाव एवं मानसिक स्वास्थ्य Ergonomics and Workplace Design/ एर्गोनॉमिक्स एवं कार्यस्थल डिजाइन Health Surveillance and Medical Examination / स्वास्थ्य निगरानी एवं चिकित्सीय परीक्षण
5	Occupational Safety and Health Provisions in India / भारत में व्यावसायिक सुरक्षा एवं स्वास्थ्य संबंधी प्रावधान Industrial Waste Management and Environmental Safety/ औद्योगिक अपशिष्ट प्रबंधन एवं पर्यावरणीय सुरक्षा Emergency Preparedness, Response and First Aid Management/ आपातकालीन तैयारी, प्रतिक्रिया एवं प्राथमिक उपचार प्रबंधन Occupational Health and Workplace Safety Management System (ISO 45001:2018)/ व्यावसायिक स्वास्थ्य एवं कार्यस्थल सुरक्षा प्रबंधन प्रणाली (आईएसओ 45001:2018)

Suggested Readings:

- Narayanan, K. T. (2017). Safety, Health and Environment Handbook. McGraw Hill Education.
- Reed, S., Pisaniello, D., & Benke, G. (Eds.). (2020). Principles of Occupational Health and Hygiene: An Introduction. Routledge.
- Deshmukh, L. M. Industrial Safety Management: Hazard Identification and Risk Control. McGraw Hill.
- Levy, B. S., Wegman, D. H., Baron, S. L., & Sokas, R. K. (2017). Occupational and Environmental Health: Recognizing and Preventing Disease and Injury. Oxford University Press.
- Koradecka, D. (2010). Handbook of Occupational Safety and Health. CRC Press.
- Yassi, A., Kjellstrom, T., de Kok, T., & Guidotti, T. (2001). Basic Environmental Health. Oxford University Press.

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Semester I / प्रथम सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	III	Environmental Pollution and Management (पर्यावरणीय प्रदूषण एवं प्रबंधन)	DSE 1	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand the concepts, types, sources, and impacts of environmental pollution.
2. Analyse air, water, soil, and noise pollution and their control measures.
3. Apply principles of solid, plastic, e-waste, and biomedical waste management.
4. Assess pollution prevention, environmental management, and compliance practices.
5. Promote effective pollution management through collective environmental responsibility.

UNIT	CONTENTS
1	Environmental Pollution: Concept and Scope / पर्यावरण प्रदूषण : अवधारणा एवं क्षेत्र Types of Environmental Pollution / पर्यावरण प्रदूषण के प्रकार Sources and Causes of Pollution / प्रदूषण के स्रोत एवं कारण Pollutants: Types and Characteristics / प्रदूषकों के प्रकार एवं विशेषताएँ Environmental and Public Health Impacts of Pollution / प्रदूषण के पर्यावरणीय एवं स्वास्थ्य संबंधी प्रभाव
2	Sources, Effects and Control of Air Pollution / वायु प्रदूषण के स्रोत, प्रभाव एवं नियंत्रण Indoor and Outdoor Air Pollution / आंतरिक एवं बाह्य वायु प्रदूषण Air Quality Index (AQI) / वायु गुणवत्ता सूचकांक Sources, Effects and Control of Water Pollution / जल प्रदूषण के स्रोत, प्रभाव एवं रोकथाम
3	Soil Pollution: Sources, Impacts and Remedial Measures / मृदा प्रदूषण : स्रोत, प्रभाव एवं उपचार Industrial Contamination / औद्योगिक प्रदूषण Noise Pollution: Sources, Effects and Control Measures / ध्वनि प्रदूषण : स्रोत, प्रभाव एवं नियंत्रण
4	Plastic Pollution / प्लास्टिक प्रदूषण Solid Waste Management Systems / ठोस अपशिष्ट प्रबंधन प्रणाली E-Waste and Biomedical Waste Management / ई-कचरा एवं जैव-चिकित्सीय अपशिष्ट प्रबंधन Principles of Pollution Prevention and Control / प्रदूषण नियंत्रण के सिद्धांत

5	Environmental Management: Concept and Objectives / पर्यावरण प्रबंधन : अवधारणा एवं उद्देश्य Environmental Audit and Compliance / पर्यावरणीय अंकेक्षण एवं अनुपालन Role of Government, Industry and Society in Pollution Management / प्रदूषण प्रबंधन में सरकार, उद्योग एवं समाज की भूमिका

Suggested Readings:

- Brusseau, M. K., Pepper, I. & Gerba, C. P. (2019). Environmental and Pollution Science. Academic Press.
- Vallero, D. A. (2014). Fundamentals of Air Pollution. Academic Press.
- Nemerow, N. L. (2009). Environmental Engineering: Water, Wastewater, Soil and Groundwater Treatment and Remediation. Sixth Ed., Wiley.
- Pierzynski, G. M., Vance, G. F. & Sims, J. T. (2000). Soils and Environmental Quality. Second Ed., CRC Press.
- Murphy, E. & King, E. A. (2022). Environmental Noise Pollution: Noise Mapping, Public Health, and Policy. Second Ed., Elsevier.
- Yassi, A., Kjellstrom, T., de Kok, T. & Guidotti, T. (2001). Basic Environmental Health. Oxford University Press.
- Trivedi, P. K. & Goel, P. K. (1984). Chemical and Biological Methods of Water Pollution Studies. Environmental Publications.

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Post Graduate Diploma in Environmental Health, Safety and Sustainability

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Semester I / प्रथम सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	IV	Gender, Resources and Environment (लैंगिकता, संसाधन एवं पर्यावरण)	DSE 2	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand gender, resource ownership, and environmental relationships.
2. Analyse gender-based inequalities in livelihoods and resource access.
3. Examine gender dimensions of environmental health and climate change.
4. Evaluate women's role in environmental governance and movements.
5. Promote gender-responsive and sustainable environmental practices.

UNIT	CONTENTS
1	Sex and Gender Distinction / लिंग एवं लैंगिकता में अंतर Gender Roles and Social Construction / लैंगिक भूमिकाएँ एवं सामाजिक निर्माण Relationship between Gender, Society and Environment / लैंगिकता, समाज एवं पर्यावरण का संबंध Gender Equality and Environmental Justice (Basic Concept) / लैंगिक समानता एवं पर्यावरणीय न्याय (आधारभूत अवधारणा)
2	Gender and Livelihood Systems / लैंगिकता एवं आजीविका प्रणाली Indigenous Knowledge and Women's Role/ पारंपरिक ज्ञान एवं महिलाओं की भूमिका Gender Issues in Agriculture and Rural Economy / कृषि एवं ग्रामीण अर्थव्यवस्था में लैंगिक मुद्दे Property Rights, Land Rights and Resource Ownership / संपत्ति अधिकार, भूमि अधिकार एवं संसाधन स्वामित्व Gender, Poverty and Resource Inequality / लैंगिकता, गरीबी एवं संसाधन असमानता
3	Gender and Environmental Health / लैंगिकता एवं पर्यावरणीय स्वास्थ्य Women, Children and Environmental Vulnerability / महिलाएँ, बच्चे एवं पर्यावरणीय भेद्यता Gender Dimensions of Migration and Environmental Change / प्रवसन एवं पर्यावरणीय परिवर्तन के लैंगिक आयाम Climate Change and Gender-related Impacts/ जलवायु परिवर्तन एवं लैंगिक प्रभाव Climate Change and Literature / जलवायु परिवर्तन एवं साहित्य

4	Women's Participation in Environmental Decision-Making / पर्यावरणीय निर्णय प्रक्रिया में महिलाओं की भागीदारी Gender and Local Governance Institutions / स्थानीय प्रशासन एवं लैंगिकता Community Participation and Inclusive Development / सामुदायिक सहभागिता एवं समावेशी विकास Role of Government and Civil Society in Gender-responsive Governance / लैंगिक उत्तरदायी प्रशासन में सरकार एवं नागरिक समाज की भूमिका
5	Role of Women in Environmental Movements in India / भारत के पर्यावरणीय आंदोलनों में महिलाओं की भूमिका Gender and Sustainable Livelihood Practices / लैंगिकता एवं सतत आजीविका की प्रथाएँ Eco-feminism: Concepts and Debates / इको-फेमिनिज्म : अवधारणा एवं विमर्श

Suggested Readings:

- Harris, J. M., Wise, T. A., Gallagher, K. P. & Goodwin, N. R. (2001). A Survey of Sustainable Development: Social and Economic Dimensions. Island Press, Washington, D.C.
- Rogers, P., Jalal, K. F. & Boyd, J. A. (2007). An Introduction to Sustainable Development. Routledge.
- Walther, J. V. (2014). Earth's Natural Resources. Jones & Bartlett Publishers.
- Singh, J. S., Singh, S. P. & Gupta, S. R. (2017). Ecology, Environment and Resource Conservation. S. Chand & Company.
- Sharma, P. D. (2011). Ecology and Environment. Rastogi Publications.
- Kumar, P. & Mina, U. (2024). Fundamentals of Ecology and Environment. Pearson and Pathfinder Publication.
- Masters, G. M. & Ela, W. P. (2022). Introduction to Environmental Engineering and Science. Pearson Education India.

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Post Graduate Diploma in Environmental Health, Safety and Sustainability

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Semester II / द्वितीय सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	V	Sustainability and Sustainable Development Goals (सततता एवं सतत विकास लक्ष्य)	DSCC 3	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand the concepts, dimensions, and challenges of sustainability.
2. Explain the framework and interlinkages of the 17 SDGs.
3. Apply principles of sustainable resource use and responsible consumption.
4. Evaluate sustainability practices using indicators, ESG, and CSR frameworks.
5. Promote climate resilience, circular economy, and sustainable lifestyles.

UNIT	CONTENTS
1	Concept and Evolution of Sustainability / सततता की अवधारणा एवं विकास Environmental, Social and Economic Dimensions of Sustainability / सततता के पर्यावरणीय, सामाजिक एवं आर्थिक आयाम Challenges to Sustainable Development / सतत विकास को चुनौतियाँ Global Sustainability Issues / वैश्विक सततता मुद्दे
2	Concept and Framework of Sustainable Development Goals / सतत विकास लक्ष्यों की अवधारणा एवं रूपरेखा Overview of 17 Sustainable Development Goals / 17 सतत विकास लक्ष्यों का संक्षिप्त परिचय Interlinkages among SDGs / सतत विकास लक्ष्यों के बीच अंतर्संबंध
3	Sustainable Settlements: Cities and Communities/ सतत बस्तियाँ: शहर एवं समुदाय Sustainable Energy and Resource Use / सतत ऊर्जा एवं संसाधन उपयोग Sustainable Consumption and Responsible Production / सतत उपभोग एवं उत्तरदायी उत्पादन Role of Educational Institutions in Sustainability Promotion / सततता संवर्धन में शैक्षणिक संस्थानों की भूमिका
4	Sustainability Indicators and Metrics / सततता संकेतक एवं मापदंड Corporate Social Responsibility and Sustainability / कॉर्पोरेट सामाजिक उत्तरदायित्व एवं सततता Environmental, Social and Governance (ESG) Framework/ पर्यावरणीय, सामाजिक एवं प्रशासनिक

	ढाँचा Role of Indigenous Communities in Natural Resource Conservation / प्राकृतिक संसाधन संरक्षण में आदिवासी समुदायों की भूमिका
5	Climate Change and Sustainable Development / जलवायु परिवर्तन एवं सतत विकास Climate Adaptation and Resilience Building / जलवायु अनुकूलन एवं लचीलापन निर्माण Circular Economy and Resource Efficiency / चक्रीय अर्थव्यवस्था एवं संसाधन दक्षता Sustainable Lifestyles and Behavioural Change / सतत जीवनशैली एवं व्यवहार परिवर्तन

Suggested Readings:

- Sachs, J. D. (2015). The Age of Sustainable Development. Columbia University Press.
- United Nations. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development.
- Elliott, J. (2012). An Introduction to Sustainable Development. 4th Edition. Routledge.
- Rogers, P., Jalal, K. F. & Boyd, J. A. (2007). An Introduction to Sustainable Development. Routledge.
- Bell, S. & Morse, S. (2008). Sustainability Indicators: Measuring the Immeasurable? Earthscan.
- Lacy, P. & Rutqvist, J. (2015). Waste to Wealth: The Circular Economy Advantage. Palgrave Macmillan.
- Harris, J. M., Wise, T. A., Gallagher, K. P. & Goodwin, N. R. (2001). A Survey of Sustainable Development: Social and Economic Dimensions. Island Press, Washington, D.C.
- Sustainable Development in India: Stocktaking in the Run up to Rio+20. (2011). TERI for Ministry of Environment & Forests, Government of India.

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UTTARAKHAND SANSKRIT UNIVERSITY, HARIDWAR

Post Graduate Diploma in Environmental Health, Safety and Sustainability

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Semester II / द्वितीय सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	VI	Disaster Management (आपदा प्रबंधन)	DSCC 4	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand disaster concepts, hazards, risks, and vulnerabilities.
2. Analyse natural, industrial, biological, and human-induced disasters.
3. Apply principles of disaster preparedness, response, mitigation, and recovery.
4. Develop skills in first aid, safety measures, and emergency preparedness.
5. Promote community resilience, risk reduction, and disaster awareness.

UNIT	CONTENTS
1	Concept, Definition and Characteristics of Disaster / आपदा की अवधारणा, परिभाषा एवं विशेषताएँ Hazard, Vulnerability, Risk and Resilience / खतरा, संवेदनशीलता, जोखिम एवं सुदृढ़ता Classification of Disasters: Natural and Human-Induced Disasters / प्राकृतिक एवं मानव-निर्मित आपदा Disaster Management Cycle (Prevention, Mitigation, Preparedness, Response and Recovery) / आपदा प्रबंधन चक्र (निवारण, न्यूनीकरण, पूर्व-तैयारी, प्रतिक्रिया एवं पुनर्प्राप्ति) Disaster Risk Reduction and Community Resilience / आपदा जोखिम न्यूनीकरण एवं सामुदायिक सुदृढ़ता
2	Earthquake, Flood, Drought and Landslide / भूकंप, बाढ़, सूखा एवं भूस्खलन Forest Fire and Wildfire Management / वनाग्नि एवं जंगल की आग का प्रबंधन Biological Disasters (Epidemics and Pandemics) / जैविक आपदाएँ (महामारी एवं वैश्विक महामारी) Snake Bite and Animal-related Emergencies/ सर्पदंश एवं जीव-जंतु जनित आपात स्थितियाँ Human-Wildlife Conflict / मानव-वन्यजीव संघर्ष
3	Concept and Types of Industrial Disasters / औद्योगिक आपदाओं की अवधारणा एवं प्रकार Chemical, Gas Leakage, Fire and Explosion Accidents / रासायनिक, गैस रिसाव, अग्नि एवं विस्फोट दुर्घटनाएँ Nuclear and Technological Disasters / परमाणु एवं तकनीकी आपदाएँ Industrial Safety Equipment and Safety Systems / औद्योगिक सुरक्षा उपकरण एवं सुरक्षा प्रणालियाँ

UTTARAKHAND SANSKRIT UNIVERSITY, HARIDWAR

Post Graduate Diploma in Environmental Health, Safety and Sustainability

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Semester II / द्वितीय सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	VI	Disaster Management (आपदा प्रबंधन)	DSCC 4	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand disaster concepts, hazards, risks, and vulnerabilities.
2. Analyse natural, industrial, biological, and human-induced disasters.
3. Apply principles of disaster preparedness, response, mitigation, and recovery.
4. Develop skills in first aid, safety measures, and emergency preparedness.
5. Promote community resilience, risk reduction, and disaster awareness.

UNIT	CONTENTS
1	Concept, Definition and Characteristics of Disaster / आपदा की अवधारणा, परिभाषा एवं विशेषताएँ Hazard, Vulnerability, Risk and Resilience / खतरा, संवेदनशीलता, जोखिम एवं सुदृढ़ता Classification of Disasters: Natural and Human-Induced Disasters / प्राकृतिक एवं मानव-निर्मित आपदा Disaster Management Cycle (Prevention, Mitigation, Preparedness, Response and Recovery) / आपदा प्रबंधन चक्र (निवारण, न्यूनीकरण, पूर्व-तैयारी, प्रतिक्रिया एवं पुनर्प्राप्ति) Disaster Risk Reduction and Community Resilience / आपदा जोखिम न्यूनीकरण एवं सामुदायिक सुदृढ़ता
2	Earthquake, Flood, Drought and Landslide / भूकंप, बाढ़, सूखा एवं भूस्खलन Forest Fire and Wildfire Management / वनाग्नि एवं जंगल की आग का प्रबंधन Biological Disasters (Epidemics and Pandemics) / जैविक आपदाएँ (महामारी एवं वैश्विक महामारी) Snake Bite and Animal-related Emergencies/ सर्पदंश एवं जीव-जंतु जनित आपात स्थितियाँ Human-Wildlife Conflict / मानव-वन्यजीव संघर्ष
3	Concept and Types of Industrial Disasters / औद्योगिक आपदाओं की अवधारणा एवं प्रकार Chemical, Gas Leakage, Fire and Explosion Accidents / रासायनिक, गैस रिसाव, अग्नि एवं विस्फोट दुर्घटनाएँ Nuclear and Technological Disasters / परमाणु एवं तकनीकी आपदाएँ Industrial Safety Equipment and Safety Systems / औद्योगिक सुरक्षा उपकरण एवं सुरक्षा प्रणालियाँ

	Major Industrial Disaster Case Studies (Bhopal Gas Tragedy, Chernobyl Disaster, Fukushima Nuclear Disaster)/ प्रमुख औद्योगिक आपदाओं के अध्ययन
4	Social Conflicts, Riots and Humanitarian Emergencies / सामाजिक संघर्ष, दंगे एवं मानवीय संकट Terrorism Disaster / आतंकवाद आपदा Cyber Threats and Information Security Emergencies / साइबर खतरे एवं सूचना सुरक्षा आपात स्थितियाँ Financial and Economic Crises as Disasters / वित्तीय एवं आर्थिक संकट एक आपदा के रूप में Community Safety and Public Awareness / सामुदायिक सुरक्षा एवं जन-जागरूकता
5	Disaster Preparedness in Educational Institutions / शैक्षणिक संस्थानों में आपदा तैयारी Mock Drills and Disaster Preparedness Exercises / मॉक ड्रिल एवं आपदा तैयारी अभ्यास Principles of First Aid and Life-Saving Techniques / प्राथमिक उपचार के सिद्धांत एवं जीवनरक्षक तकनीकें First Aid Kits: Components, Uses and Maintenance / प्राथमिक उपचार किट के घटक, उपयोग एवं रखरखाव Role of Government Agencies, NGOs and Community Organizations in Disaster Recovery / आपदा पुनर्वास में सरकारी, गैर-सरकारी एवं सामुदायिक संस्थाओं की भूमिका

Suggested Readings:

- Nagarajan, R. (2014). Natural and Man-made Disasters: Assessment and Management. Capital Publishing Company.
- Collins, Larry R. & Schneid, Thomas D. (2000). Disaster Management and Preparedness. Taylor and Francis.
- Goel, S. L. & Kumar, Ram. (2001). Disaster Management. Deep and Deep Publications.
- United Nations. (2004). Living with Risk: A Global Review of Disaster Reduction Initiatives.
- Parasuraman, S. (2004). India Disasters Report: Towards a Policy Initiatives. Oxford University Press.
- Cuny, F. (1983). Disasters and Development. Oxford University Press, England.
- Cutter, S. L. (1999). Environmental Risks and Hazards. Prentice Hall of India Pvt. Ltd., New Delhi.
- Smith, K. (1996). Environmental Hazards: Assessing Risk and Reducing Disaster. Routledge, London.

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UTTARAKHAND SANSKRIT UNIVERSITY, HARIDWAR

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Semester II / द्वितीय सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	VII	Biodiversity and Wildlife Conservation (जैव विविधता एवं वन्यजीव संरक्षण)	DSE 3	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand biodiversity, wildlife ecology, and their importance.
2. Analyse major threats to biodiversity and wildlife.
3. Explain wildlife conservation methods, protected areas, and legal frameworks.
4. Evaluate strategies for habitat restoration and wildlife management.
5. Promote community and citizen participation in biodiversity conservation.

UNIT	CONTENTS
1	Concept, Definition and Importance of Biodiversity / जैव विविधता की अवधारणा, परिभाषा एवं महत्व Levels of Biodiversity: Genetic, Species and Ecosystem Diversity / जैव विविधता के स्तर: आनुवंशिक, प्रजातीय एवं पारितंत्र विविधता Biodiversity Hotspots of India / भारत के जैव विविधता हॉटस्पॉट Values of Biodiversity / जैव विविधता के मूल्य
2	Wildlife Ecology: Concept and Scope / वन्यजीव पारिस्थितिकी : अवधारणा एवं क्षेत्र Food Chain, Food Web and Ecological Balance / खाद्य श्रृंखला, खाद्य जाल एवं पारिस्थितिक संतुलन Wildlife Habitat Degradation and Restoration / वन्यजीव आवास का क्षरण एवं पुनर्स्थापन Wildlife Corridors / वन्यजीव गलियारे
3	Threats to Biodiversity and Wildlife/ जैव विविधता एवं वन्यजीवों के समक्ष खतरे Habitat Loss and Fragmentation / आवास विनाश एवं विखंडन Human-Wildlife Conflict / मानव-वन्यजीव संघर्ष Wildlife Crime, Poaching and Illegal Wildlife Trade / वन्यजीव अपराध, अवैध शिकार एवं व्यापार Invasive Alien Species / आक्रामक विदेशी प्रजातियाँ IUCN Categories/ आईयूसीएन श्रेणियाँ

4	In-situ and Ex-situ Conservation / यथास्थल एवं बाह्य संरक्षण Protected Area Network / संरक्षित क्षेत्र तंत्र Wildlife Management Techniques / वन्यजीव प्रबंधन की तकनीकें Wildlife Protection Act, 1972 / वन्यजीव संरक्षण अधिनियम, 1972 Biological Diversity Act, 2002 / जैव विविधता अधिनियम, 2002
5	Community Participation in Biodiversity Conservation / जैव विविधता संरक्षण में सामुदायिक सहभागिता Indigenous Knowledge and Traditional Conservation Practices / पारंपरिक ज्ञान एवं संरक्षण पद्धतियाँ Wildlife Monitoring / वन्यजीव निगरानी Citizen Participation and Biodiversity Conservation/ नागरिक सहभागिता एवं जैव विविधता संरक्षण

Suggested Readings:

- Van Dyke, F. & Lamb, R. L. (2020). Conservation Biology: Foundations, Concepts, Applications. Springer.
- Krishnamurthy, K. V. (2004). An Advanced Textbook on Biodiversity: Principles and Practice. Oxford & IBH Publishing Co. Pvt. Ltd.
- Gaston, K. J. & Spicer, J. I. (2004). Biodiversity: An Introduction. Wiley-Blackwell.
- Magurran, A. E. (2013). Measuring Biological Diversity. Wiley-Blackwell.
- Goutam Kumar Saha & Subhendu Mazumdar. (2017). Wildlife Biology: An Indian Perspective. Prentice Hall India Pvt. Ltd.
- Bharucha, E. (2002). The Biodiversity of India (Vol. 1). Mapin Publishing Pvt. Ltd.
- Negi, S. S. (1993). Biodiversity and Its Conservation in India. Indus Publishing.
- Singh, S. K. (2005). Textbook of Wildlife Management. International Book Distributing Company.

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Semester II / द्वितीय सत्र

Syllabus based on the NEP 2020 (w.e.f. 2026–27)

Credit	Paper	Title	Code	Marks
04	VIII	Environmental Resources, Policies and Conservation (पर्यावरणीय संसाधन, नीतियाँ एवं संरक्षण)	DSE 4	100 (75 Theory Exam, 25 Internal Assessment)

Course Outcomes

By the end of the course, students will be able to:

1. Understand natural resources, conservation, and sustainable resource management.
2. Analyse environmental policies, laws, and regulatory frameworks.
3. Apply tools and approaches for environmental assessment and resource management.
4. Explain major national and international environmental agreements and conventions.
5. Promote environmental education, ethics, and sustainable conservation practices.

UNIT	CONTENTS
1	Concept, Scope and Significance of Natural Resources / प्राकृतिक संसाधनों की अवधारणा, स्वरूप एवं महत्व Classification of Natural Resources: प्राकृतिक संसाधनों का वर्गीकरण Forest Resources / वन संसाधन Water Resources: जल संसाधन
2	Integrated Water Resource Management / समेकित जल संसाधन प्रबंधन Soil Conservation Techniques / मृदा संरक्षण तकनीकें Community-Based Natural Resource Management / सामुदायिक आधारित प्राकृतिक संसाधन प्रबंधन GIS and Remote Sensing Applications in Resource Management / संसाधन प्रबंधन में GIS एवं रिमोट सेंसिंग
3	Constitutional Provisions for Environmental Protection / पर्यावरण संरक्षण संबंधी संवैधानिक प्रावधान Environment (Protection) Act, 1986 / पर्यावरण (संरक्षण) अधिनियम, 1986 Water (Prevention and Control of Pollution) Act, 1974 / जल अधिनियम, 1974 Air (Prevention and Control of Pollution) Act, 1981 / वायु अधिनियम, 1981 Public Liability Insurance Act, 1991 / लोक दायित्व बीमा अधिनियम, 1991 National Green Tribunal Act, 2010 / राष्ट्रीय हरित अधिकरण अधिनियम, 2010

4	Environmental Impact Assessment (EIA) / पर्यावरण प्रभाव आकलन United Nations Framework Convention on Climate Change / जलवायु परिवर्तन पर संयुक्त राष्ट्र रूपरेखा अभिसमय, Kyoto Protocol / क्योटो प्रोटोकॉल, Paris Agreement / पेरिस समझौता, Convention on International Trade in Endangered Species of Wild Fauna and Flora / वन्य जीव एवं वनस्पतियों की संकटग्रस्त प्रजातियों के अंतर्राष्ट्रीय व्यापार पर अभिसमय (CITES) Ramsar Convention / रामसर अभिसमय
5	Concept, Objectives and Importance of Environmental Education / पर्यावरण शिक्षा की अवधारणा, उद्देश्य एवं महत्व Supreme Court Directions and UGC Framework on Environmental Education at the Undergraduate Level / स्नातक स्तर पर पर्यावरण शिक्षा संबंधी सर्वोच्च न्यायालय के निर्देश एवं यूजीसी रूपरेखा Environmental Ethics / पर्यावरणीय नैतिकता National Education Policy (NEP) 2020 and Environmental Education / राष्ट्रीय शिक्षा नीति (NEP) 2020 एवं पर्यावरण शिक्षा

Suggested Readings:

- Leelakrishnan, P. (2021). Environmental Law in India. LexisNexis.
- Munn, R. E. (1979). Environmental Impact Assessment: Principles and Procedures. Wiley.
- Lillesand, T., Kiefer, R. W. & Chipman, J. (2015). Remote Sensing and Image Interpretation. Wiley.
- Walther, J. V. (2014). Earth's Natural Resources. Jones & Bartlett Publishers.
- Chiras, D. D., Reganold, J. P. & Owens, O. S. (2001). Natural Resources Conservation: Management for Sustainable Future. Pearson.
- Shivakoti, G., Pradhan, U. & Helmi, H. (2016). Redefining Diversity and Dynamics of Natural Resources Management in Asia. Elsevier.
- Rathi, A. K. A. (2021). Handbook of Environmental Impact Assessment: Concepts and Principles. Cambridge Scholars Publishing.
- Singh, J. S., Singh, S. P. & Gupta, S. R. (2017). Ecology, Environment and Resource Conservation. S. Chand & Company.

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