ENTRANCE TEST SYLLABUS –2026
(NEP 2020 UG Syllabus)
M.Sc. Environmental Science (2-Year PG Programme)
School of Earth and Environmental Science
University of Kashmir

Unit 1. Environment and Ecology

Basic concepts, scope and importance of environmental science; structure and functioning of the atmosphere, lithosphere, hydrosphere and biosphere; cryosphere and built environment; population concepts, population growth patterns, age structure and survivorship; species interactions; community characteristics and ecological succession; ecosystem structure and functions, food chains and webs, ecological pyramids, energy flow, productivity, decomposition and biogeochemical cycles; human population theories, ecological footprint and Anthropocene.

Unit 2. Natural Resources and Biodiversity

Classification, distribution, and utilization of natural resources including forest, water, minerals, and energy; biodiversity levels, values, hotspots, cold spots, and India as a megadiverse nation; threats to biodiversity and IUCN categories; biogeographic zones, biomes, and zoogeographic realms; dispersal mechanisms and migration; principles and approaches for conservation and management of biodiversity and natural resources.

Unit 3. Environmental Chemistry

Fundamentals of analytical chemistry including stoichiometry, titrimetry, gravimetry, spectrophotometry, flame photometry, AAS and basic chromatographic techniques; atmospheric chemistry including ions, radicals, particulate matter and photochemical reactions; water chemistry including physico-chemical properties, gas solubility, BOD, COD, nutrient chemistry and carbonate–bicarbonate system; soil chemistry including pedogenesis, soil profile, components and physico-chemical and biological properties.

Unit 4. Human–Environment Interactions

Foundations of environmental education, ethics, environmental literacy and activism; influence of environment on human cognition and behaviour, environmental psychology, urban environmental stress and eco-philosophical perspectives; social dimensions of environmental issues, environmentalism, environmental justice and major environmental organizations; interface of science, policy and society.

Unit 5. Environmental Pollution

Sources, types and impacts of air pollution with emphasis on major air pollutants, air quality standards and monitoring; indoor air pollution, noise pollution and associated health impacts; water pollution in inland and marine systems including nutrients, heavy metals, biocides and

standards; soil pollution, land degradation, erosion, pesticides and fertilizers; solid waste, plastic waste, e-waste, radiation pollution and light pollution.

Unit 6. Environmental Geoscience and Disaster Management

Origin and evolution of Earth, geological time scale, Earth's structure, plate tectonics, geomagnetism and continental drift; geochemical classification of elements, mobility of trace elements, radioactive tracers and major geochemical cycles; concepts of hazards, risks and vulnerabilities; types, causes and impacts of natural disasters including earthquakes, landslides, floods, volcanic eruptions and climate extremes; disaster management cycle, mitigation strategies, early warning systems and institutional frameworks.

Unit 7. Environmental Laws, Policies, and Governance

Evolution of environmental legislation in India; constitutional provisions for environmental protection; major environmental acts including Wildlife Protection Act, Water Act, Air Act, Forest Conservation Act, Environmental Protection Act and National Green Tribunal Act; rules for solid waste, hazardous waste and biomedical waste; national environmental, water, forest and energy policies; national missions and institutional mechanisms for environmental governance.

Unit 8. Environmental Pollution Control and Management

Principles and technologies for controlling air pollution, including particulate and gaseous control, biofilters and noise abatement; water pollution control through sewage treatment processes, eutrophication control, river and lake restoration, and groundwater protection; soil conservation, reclamation of degraded soils and sustainable agricultural practices; management and mitigation of solid waste, e-waste, radiation and thermal pollution.

Unit 9. Aquatic Ecology

Freshwater biodiversity, major taxonomic groups and measures of diversity; structure and functioning of streams and rivers, flow regimes, hydrographs and environmental flows; origin, diversity and stratification of lakes and wetlands; paleolimnology and ontogeny of freshwater systems; anthropogenic pressures including habitat alteration, hydrological changes, mining, pollution, biological invasions, damming, climate change and harmful algal blooms.

Unit 10. Environmental Economics and Sustainable Development

Foundations of environmental economics, natural capital, externalities and carbon markets; ecosystem services, typologies and valuation approaches; environmental valuation methods and incentives for ecosystem services; sustainable development concepts, SDGs, circular economy, green infrastructure, sustainable cities and globalization.

Unit 11. Atmospheric Science

Fundamentals of meteorology, including temperature, pressure, humidity, precipitation, atmospheric stability, radiation and heat budget; climatology including climate classification, monsoon systems, western disturbances and paleoclimatology; atmospheric structure,

composition and aerosols; global circulation systems, ocean–atmosphere interactions; atmospheric observations and remote sensing, including LIDAR, SODAR, radars, radiosondes and satellite sensors.

Unit 12. Terrestrial Ecology

Structure, functioning, and productivity of terrestrial ecosystems; decomposition and carbon sequestration; major global and Indian forest types, forest structure and biota, and impacts of deforestation; desert ecosystems, types, ecological complexity and adaptations; grassland ecosystems, global and Indian grasslands, management strategies; agroecosystems and the role of biodiversity in agricultural sustainability.