

SCHOOL OF ENVIRONMENTAL SCIENCES

JAWAHARLAL NEHRU UNIVERSITY

ABOUT THE SCHOOL

Environmental Sciences as a discipline was incepted at JNU in 1974 as a bold step to clear precept the frame of boundaries across disciplines— Biology, Chemistry, Geology, Mathematics, Physics among others. The school is truly multidisciplinary in its teaching, research and outreach activities. These ensure interaction between fundamental and applied sciences, and expect evaluation of meaningful, viable and sound academic curriculum where Environmental Science remains a central focus. The outcomes of the research are value addition to existing knowledge and creation of newer information which helps in affecting and shaping policy interventions for environmental conservation and management. The research work ranges from environmental pollution, climate change issues, ecological and geological processes to science and technology based interventions. The intake of students, research scholars and faculty members ensures diverse interests and multi-disciplinary built-up in the school with the dynamic perspectives to find sustainable solutions.

The school offers Ph.D. and M.Sc. programmes. The School is distinguished for recipient of UGC sponsored special assistance programme (SAP)/DSA/ DRS programmes, FIST sponsored by the DST and the ENVIS centre sponsored by the Ministry of Environment and Forests, Government of India. Academic activities of the faculty members have been recognized both nationally and internationally, and several of them are recipients of various research projects, funded by governmental and intergovernmental agencies such as DST, ISRO, DBT, MoES, UGC, ICMR, CSIR, MoEF&CC, Global Environment Facility, NIC, DRDO, MoWR and others. Faculty members are also part of various committees constituted by the Central and State Governments. The School has set-up a Central Instrumental Facility (CIF) housing many state of art of analytical instruments including CHNSO Analyser, Gas Chromatograph, Atomic Absorption Spectroscopy, UV-Vis Spectrophotometer, Scintillation Counter, AKTA system, XRD, Real Time PCR, Microwave Digestion, AXIOSKOP AXIOVERT microscope and Fluorescent Microscope, Flow Cytometer, OC/EC analyzer, Ion exchange Chromatograph, Ultra-centrifuge, Spectroradiometer, Atomic absorption spectroscopy, WD - XRF, High-end Performance Computing (HPC) facility etc. Other than that a well-equipped M.Sc. laboratory with some essential instrumental facilities, an in-house library and computational laboratory with internet facilities are provided to the students to strengthen their scientific awareness with global challenges.

For more details about the School, visit the JNU website : <https://www.jnu.ac.in/ses>

PROGRAMMES OF STUDY

The activities of the School are inter-disciplinary. The School endeavours to study the problem of environment in an integrated manner using the principles of Mathematics, Physics, Chemistry, Geology and Biology.

(i) M.Sc.

The School offers a two years interdisciplinary M.Sc. programme in Environmental sciences. The program covers various aspects of the environment by providing in depth understanding of issues at local, regional and global level; using interdisciplinary teaching/research/field work resources. Well-designed contemporary courses are offered to ensure development of scientific understanding of the environmental problems. The courses offered fall under four categories: (i) Core courses, (ii) Optional courses (iii) Remedial courses and (iv) Non-credit courses. The M.Sc. programme is spread over four semesters. It carries 64 credits and comprises of four different components viz., I) Teaching, II) Lab Work, III) Field Work and IV) Dissertation. The subject's areas covered require knowledge of the basic scientific disciplines (Mathematics, Physics, Chemistry, Biology, and Geology). Detail about all the courses offered in this programme can be obtained from the Jawaharlal Nehru University Website.

(ii) Ph.D.

Students admitted for Ph.D. are required to go through one-year mandatory course works and secure qualifying CGPA for further continuation for the PhD thesis. The candidates may give their preference to any two research areas of the following four research areas at the time of applying. The candidature of those candidates applying for more than two research areas of the School is likely to be rejected. Therefore, candidates are advised in their own interest not to apply for more than two research areas.

Based on performance in entrance exam, candidates will be called for interview. At the time of interview, the candidates will have to give their preference for research specializations within the area they have been called for. The research specializations of each faculty are described in the JNU web site.

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Research Area-I

Application of applied Physics and Mathematics in the disciplines to study the Environmental Problems, Air Pollution, Aerosol Studies, Noise, Meteorology and Climatology, Science of Climate change and Regional Climate Modeling, Paleoclimate, Snow and Glacier Physics.

Research Area-II

Application of Geology Geochemistry and Biogeochemistry to problems of surface earth processes, water bodies including ground water, glaciers, Coastal Aquatic Systems, Estuaries and Mangroves, soils/ sediments, Mineral Deposits and Mining Pollution. Remote sensing applications in Geosciences. Extra-terrestrial Remote sensing application in Lunar and Martian observation by using Chandrayan and Mangalyan (MOM), Climate Change impact on glacier & water resources.

Research Area-III

Application of Chemistry and Geochemistry in monitoring and management of Air, Water and Soil Pollution, Biogeochemical Cycling, Weathering and Paleoclimate studies.

Research Area-IV

Ecosystem Dynamics, Cellular and Molecular Biology, Biochemistry, Biophysics and Biotechnology in Environmental Science, Molecular Microbial Ecology, Bioremediation and Bioconversion of xenobiotics, Environmental Cancer Biology, Environmental Toxicology, Antimicrobial Agent Discovery & Development, Bioaerosols, Environmental Pathogen and Remote Sensing & GIS for LULC/ecosystem analysis & modelling.

ELIGIBILITY

Master of Science

SNo	Sub. Code & Sub. Code Number	Eligibility
1.	Environmental Sciences - SESM (223)	B.Sc. degree or equivalent in any branch of basic or applied science under 10+2+3 pattern of education or B.E./B.Tech/MBBS with at least 55% marks.

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Ph.D.

SNo	Sub. Code & Sub. Code Number	Eligibility
1.	Research Area I ONEH (885)	Only those candidates shall be considered for admission to the Ph.D. programme who have: M.Sc. in any branch of basic or applied sciences or BE/BTech/MBBS with 55% marks or equivalent Grade 'B' in UGC 7-point scale (or an equivalent Grade in a point scale wherever Grading system is followed).
2.	Research Area II TWOH (886)	OR
3.	Research Area III THRH (887)	Obtained two years M.Phil. in any branch of basic or applied sciences with 55% marks of a recognized University/ Institution (with dissertation/ seminar/ viva) or one year M.Phil. in any branch of basic or applied sciences with at least 55% marks with additional one-year research experience of a recognized University/Institutional, and one publication and 55% marks or equivalent in M.Sc.
4.	Research Area IV FORH (888)	Relaxation to SC/ST/OBC (Non creamy layer)/ PWD as per the UGC Regulations 2016.

The pattern of JNUEE is based on Multiple Choice Questions (MCQs) through Computer Based Test (CBT)

Master of Science

SNo	Sub. Code & Sub. Code Number	Eligibility
1.	Environmental Sciences - SESM (223)	The questions will be of multiple choice type. The questions will be in two parts. Part I This will have questions from the different areas of Science and Mathematics at the 10+2 level.

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		Part II This will have questions, in the areas of Physics, Chemistry, Mathematics, Geology, Botany and Zoology at the B.Sc. level.
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Ph.D.

SNo	Sub. Code & Sub. Code Number	Eligibility
1.	Research Area I ONEH (885)	<p>All questions would be of the multiple choice type. The questions will be divided into two parts:</p> <p style="text-align: center;">Part-A</p> <p>This part will have questions on Research Methodology broadly covering the topics such as Judging the ability of Searching libraries, web-based information etc., Structuring of articles, referencing etc., Describing visual, audio or written images, Writing review of book/Report etc., importance of seminar/workshop/conference, General idea of plagiarism, Concept of logbook, workbook, field book etc., Names of journals, Important publishers, Site selection criteria, sample number criteria, sample storage methods, sample extraction and digestion methods, Mean, median, mode, standard deviation, standard error, correlation, time series, scatter plots, bars, line diagram, error bars, area plots, contours etc., Accuracy, precision, null hypothesis, errors, uncertainty, Knowledge about software: statistical, GIS and RS etc.</p> <p style="text-align: center;">Part-B</p> <p>This part will have questions of M.Sc. level from Physics, Chemistry, Geology, Biology and Environmental Sciences.</p>
2.	Research Area II TWOH (886)	
3.	Research Area III THRH (887)	
4.	Research Area IV FORH (888)	