



School of Environmental Sciences

Environmental sciences as a discipline was incepted at JNU in 1974 as a bold step to clear precept of frame the boundaries across disciplines—Mathematics, Physics, Chemistry, Biology, Geology. The school is truly multidisciplinary in studies and focuses. From the school's research and teaching program intentions and efforts were to allow the interaction between pure natural sciences and expect the evolution of meaningful, viable and sound academic curriculum where Environmental Science remains a central focus, having objective assessments of its accomplishment in Teaching, Research, and Affecting and Shaping the policy. Dedicated multidisciplinary research works by Faculties of The School of Environmental Science is involved in diverse scientific interests to carry on the original field of work in different aspect of Environment and its natural resources of Earth and planetary sciences including study of Moon, Mars and other planets using satellite data with association of the society and its anthropogenic activities. Uptake of research scholars with all diversified interests built up the school with a different perspective to fight against all environmental impacts.

The school offers Ph.D., M.Phil./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 center sponsored by the Ministry of Environment and Forests, Government of India. Academic activities of the faculties 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, DOD, UGC, ICMR, CSIR, MOEF, Global Environment Facility, UNESCO, NIC, DTRL, MOWR and others. Several faculty members are 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 includes: CHNSO Analyser, Gas Chromatograph, Atomic absorption spectroscope, 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 spectroscope, WD – XRF etc. Other than that a well equipped M.Sc. laboratory with some essential small instrumental facilities, an inhouse library facility and one computational laboratory with internet facilities are provided to the student community to strengthening their scientific awareness with global challenges.

- a) In 2010 the School has developed a mode of International facility as SEVAN (Space Environment viewing and Analysis Network) supported by NASA and AOARD (JAPAN).
- b) Since last couple of years the School has developed Aerosol analysis and its interpretation in climate change.
- c) The School has developed weather prediction system.

PROGRAMMES OF STUDY

(i) Admission to Ph.D. programme

Students admitted for Ph.D. are required to go through course work and secure, required CGPA as decided by the School.

(ii) M.Phil/Ph.D.

Category-I (through entrance examination): The activities of the School are inter-disciplinary. The School endeavors to study the problem of environment in an integrated manner using the principles of Physics, Chemistry, Mathematics, Geology and Biology. The M.Phil./Ph.D. programme, started in 1975, has also undergone periodic changes. It includes extensive course work followed by a dissertation, which leads, upon successful completion, to the M.Phil degree. This is followed by research work for Ph.D. on an approved topic for a minimum of two years. Approval and successful defense of a thesis is required for a Ph.D. Degree. 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.

Category II (JRF-NET Qualified candidates):

Candidates who have qualified for Junior Research Fellowship through CSIR/UGC National Eligibility Test (NET/Equivalent) examination are eligible to apply. Candidates shall have to appear for an entrance test followed by an interview and their selection will depend on their performance in the interview. Candidates who have appeared in the CSIR/UGC NET examination but results awaited may also apply under this category. However, such candidates will be interviewed upon submission of a valid proof of having qualified for or awarded the JRF certificate at the time of interview. Moreover, only candidates with valid proof of JRF qualification would be provided permissible travelling allowance for attending interview. Please note that candidates who have been awarded "Lecturership" in the CSIR/UGC examination are not eligible and will not be interviewed.

Selected candidates are required to successfully complete seventeen credits of course work and seven credits of dissertation to become eligible for registration to the Ph.D. programme. In some cases, if the students complete the course work with a CGPA of 6.5 or more the students may be permitted to register directly for Ph.D., without submitting a dissertation worth 7 credits.

Research Area-I: Aspects of Theoretical Physics and Applied Mathematics, Application of the discipline to the study of Environmental Problems, Meteorology, Air Pollution, Noise, Lasers, Microwaves and their application in Remote Sensing, Development of Mathematical Models to Understand Environment.

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).

Research Area-III: Application of Chemistry in monitoring and management of Air, Water and Soil Pollution, Biogeochemical Cycling.

Research Area-IV: Ecosystem Dynamics, Cellular and Molecular Biology, Biochemistry, Biophysics and Biotechnology in Environmental Science, Physico-Chemical aspects of air/water pollution, 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.

(iii) M.Sc in Environmental Sciences

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 subjects 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.

Master of Science

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Intake	Eligibility	Viva/Non Viva	Course outline/guidelines	Paper will be subjective/objective/both
1	School of Environmental Sciences (SES)	Environmental Sciences-SESM (223)	31	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.	Non-viva	<p>M.Sc. in Environmental Sciences The question paper will be of multiple choice type. The question paper will be in two parts.</p> <p>Part I :This will have questions from the different areas of Science and Mathematics at the 10+2 level.</p> <p>Part II: This will have questions in the areas of Physics, Chemistry, Mathematics, Geology, Botany and Zoology at the B.Sc. level.</p>	Objective

M.Phil/Ph.D.

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Eligibility	Additional information	Viva/Non Viva	Course outline/guidelines	Paper will be subjective/objective/both
1	School of Environmental Sciences (SES)	Research Area I- ONEP (153)	M.Sc. degree or equivalent in any branch of basic or applied science or B.E./B.Tech./MBBS with minimum 55% marks. After selection on the basis of either through entrance examination (Category I) or as JRF-NET qualified candidates (Category II) they have to provide their preference for research specialization representing the faculties within the Areas applied for.	P.G. holders of AYUSH related subjects are also eligible to apply.	Viva - Voce	<p>All questions would be of the multiple choice type. The question paper will be divided into two parts:</p> <p>Part A This will have questions of B.Sc. level from the areas of Physics, Chemistry, Mathematics, Geology, Botany and Zoology.</p> <p>Part-B This part of the question paper will have questions of M.Sc. level from Physics, Chemistry Geology, Biology and Environmental Sciences.</p> <p>The entrance exam question paper would be prepared as per UGC Regulations 2016</p>	For detail please check JNU website
2		Research Area II- TWOP (154)					
3		Research Area III- THRP (155)					
4		Research Area IV- FORP (156)					

M.Phil/Ph.D. (JRF)

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Eligibility	Additional Information	Viva/Non Viva	Course outline/guidelines	Paper will be subjective/objective/both
1	School of Environmental Sciences (SES)	Research Area I- ONEJ (801)	Candidates who have qualified for Junior Research Fellowship through CSIR/UGC National Eligibility Test (NET/Equivalent) examination are eligible to apply. Other Eligibility criteria as per conditions laid down by JNU and UGC regulations	Candidates shall have to appear in an entrance test followed by an interview and their selection will be based on their performance in the interview. Candidates who have appeared in the CSIR/UGC NET examination but whose result are awaited may also apply under this category. However, such candidates will be interviewed upon submission of a valid proof of having qualified for or awarded the JRF certificate at the time of interview. Moreover, candidates with the valid period of JRF qualification only would be provided permissible traveling allowances for attending the interview. Please note that candidates who have been awarded only "Lectureship" in the CSIR/UGC examination are not eligible and will not be called for interview. P.G. holders of AYUSH related subjects are also eligible to apply.	Viva - Voce	The entrance exam question paper would be prepared as per UGC Regulations 2016 For detail please check JNU website	For detail please check JNU website
2		Research Area II- TWOJ (802)					
3		Research Area III- THRJ (803)					
4		Research Area IV- FORJ (804)					

Ph.D.

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Eligibility	Additional information	Viva/Non Viva	Course outline/guidelines	Paper will be subjective/objective/both
1	School of Environmental Sciences (SES)	Research Area I- ONEH (885)	Only those candidates shall be considered for admission to the Ph. D. Programme who have – (a) obtained 2 years M.Phil./M.E./M.Tech./MD or equivalent degree of a recognized University/Institution (with dissertation/seminar/Viva) or one year M.Phil. with additional one year research experience of a recognized University/Institution, and one publication OR (b) at least two years research experience after M.Sc./BE/B.Tech. in reputed institutions with research publication(s) comparable to M.Phil. standard. In addition, they should have obtained M.Sc./BE/B.Tech. with 55% marks or equivalent FGPA in 10 point scale/comparable standard where the grading is based on system other than 10 point scale. (c) However, the School reserves the right to adopt additional criteria for shortlisting of the applications.	For detail please check JNU website	Viva – Voce	The entrance exam question paper would be prepared as per UGC Regulations 2016 For detail please check JNU website	For detail please check JNU website
2		Research Area II- TWOH (886)					
3		Research Area III- THRH (887)					
4		Research Area IV- FORH (888)					