



**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. 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 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, MoES, UGC, ICMR, CSIR, MoEF&CC, Global Environment Facility, NIC, DRDO, 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, HIGHEND PERFORMANCE COMPUTING (HPC) FACILITY etc. Other than that a well equipped M.Sc. laboratory with some essential small instrumental facilities, an in-house library facility and 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.
- c) Since last year, School has provided the latest contribution on climate change and its modeling.
- d) 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

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.

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.

**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 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).

**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.

**(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 indepth 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	Eligibility
1	School of Environmental Sciences (SES)	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.

### **M.Phil/Ph.D.**

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Eligibility	Additional information
1	School of Environmental Sciences (SES)	Research Area I-ONEP (153)	M.Sc. or equivalent degree in any branch of basic or applied science or B.E./B.Tech/MBBS with minimum 55% marks. After selection they have to provide their preference for research specialization representing the faculties within the Areas applied for.  Relaxation to SC/ST/OBC (Non creamy layer)/Differently abled as per the UGC Regulations 2016.	<b>P.G. holders of AYUSH related subjects are also eligible to apply.</b>
2		Research Area II-TWOP (154)		
3		Research Area III-THRP (155)		
4		Research Area IV-FORP (156)		

### **Ph.D.**

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Eligibility
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) M.Sc./BE/B.Tech 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).  And  Obtained 2 years M.Phil/M.E./M.Tech/MD or equivalent degree with at least 55% marks of a recognized University/Institution (with dissertation/seminar/viva) or one year M.Phil with at least 55% marks with additional one year research experience of a recognized University/Institutional, and one publication. OR (b) M.Sc./BE/B.Tech 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).  Relaxation to SC/ST/OBC (Non creamy layer)/Differently abled as per the UGC Regulations 2016.
2		Research Area II-TWOH (886)	
3		Research Area III-THRH (887)	
4		Research Area IV-FORH (888)	