

# Prospectus

## Environmental Science (DST-FIST Supported)

### School of Earth Sciences



राजस्थान केन्द्रीय विश्वविद्यालय  
Central University of Rajasthan

(संसद के अधिनियम क्रमांक 25 वर्ष 2009 द्वारा स्थापित)  
(Established under the Central Universities Act, 2009)

## ABOUT US

The department of Environmental Science is committed to providing all students an excellent educational and research experience that includes real-life environmental problem solving, field and laboratory work using tools of remote sensing, nanotechnology, ecology, environmental biotechnology, and chemistry. Looking at the present scenario and futuristic needs, the department has established with the objectives:

- To impart knowledge of environmental problems of regional and global scale.
- To train the students for scientific analyses of environmental components for efficient environmental decision making and management.
- To act as an interface between academia and organization for interdisciplinary collaboration for environmental research.

## CAREER OPPORTUNITIES

A degree in Environmental Science offers a job opportunity for environmental scientists, faculty members as well as environmental biologists, environmental modellers, and environmental journalists. They may also shape their career through advanced research in Environmental Microbiology, Biotechnology, Agriculture, Forestry, Meteorology, Glaciology, Remote sensing, and Nanotechnology. As per the Hon'ble supreme court guideline, Environmental Science has become mandatory in all universities (about 850) in India, this offers a bright job opportunity for environmental postgraduates and doctorates. Besides, environmental protection has also become mandatory for all industries leading to the creation of vast job opportunities for environmental postgraduates and doctorates.

## PROGRAMS OFFERED

- Ph.D. Environmental Science
- M. Sc. Environmental Science (02 years)
- Integrated M.Sc. Environmental Science (05 years)

## ADMISSION

The university admits students to an integrated M.Sc., M.Sc., and Ph.D. through the Central Universities Common Entrance Test (CUCET) held yearly and conducted at centers all over India. Admission to the Doctoral program is accomplished through the CUCET and followed by an interview.

Link <http://14.139.244.219/admissions>

## FEE STRUCTURE

Fee Structure for Academic Session 2020-21

Link <http://14.139.244.219/admissions>

## STUDENT ACHIEVEMENT

### Session (2018-19)

University Grants Commission - National Eligibility Test (UGC-NET) – 9 students qualified

Graduate Aptitude Test in Engineering (GATE)-1 student qualified

UPSC- Combined Defence Services Examination (CDS) -1 student qualified

## EXTRAMURAL FUNDING RECEIVED

Various extramural funded projects of Rs. 145.4 lakhs are ongoing in the Department sanctioned by different agencies of Govt. of India e.g. DST-FIST, SERB, UGC, and SAC (ISRO).

## FACULTY MEMBERS

	Name & Qualifications	Designation	Area of Specialization
	<b>Prof. Rajesh Kumar</b> Ph.D. (Geophysics/Meteorology) BHU (India), M.Sc. (Tech.) Geophysics (Meteorology), BHU and DYSc., BHU	Professor & Head	Glaciology, Glacier Geomorphology, Climate Science, and Air Pollution
	<b>Prof. K.K. Satpathy</b> Ph.D.	Professor (Contract)	Thermal pollution, Chlorination, and Biodiversity
	<b>Dr. Laxmi Kant Sharma</b> M.Tech., Ph.D.	Associate Professor	Environmental Remote Sensing, Ecological and Environmental Management
	<b>Dr. Garima Kaushik</b> M.Sc, NET-JRF (UGC), Ph.D. (JNU, Delhi)	Assistant Professor	Environmental Biotechnology, Microbial Biodegradation of POP's (Pesticides, Pharmaceuticals, and antibiotics)
	<b>Dr. Ritu Singh</b> M.Sc, NET-JRF (UGC), Ph.D. (JNU, Delhi)	Assistant Professor	Environmental Toxicology, Environmental Pollution, and Management, Nano-remediation
	<b>Dr. Alok Kumar</b> M.Sc., M.Phil., Ph.D. (Environmental Sciences)	Assistant Professor	Biogeochemistry and Hydrogeochemistry
	<b>Dr. Shailesh K. Patidar</b> M.Sc. (Sardar Patel University), NET, Ph.D. (CSIR-CSMCRI, MKBU), Postdoc- University of Michigan, USA. Hanyang University, Seoul, South Korea.	Assistant Professor	Environmental Biotechnology (Algal biofuel, Carbon sequestration, Bioremediation), Algae-bacteria interactions, Ecophysiology of contaminated environment
	<b>Dr. Nivedita Chaudhary</b> M.Sc.; NET-JRF (UGC); Ph.D. (BHU, India); Postdoc- The Hebrew University of Jerusalem & ARO, Israel)	Assistant Professor	Air pollution and Climate Change- Monitoring and Effects on plants

# COURSE STRUCTURE

## Integrated M.Sc. Environmental Science (5 Years)

### Semester I (Minimum 18 credits to be taken)

#### Core Courses

Biology-I Diversity of Life  
(3 credits)  
Biology Practical -I (1 credit)

Calculus-I (4 credits)  
or  
Mathematics-I (4 credits)

Language and  
Communication Skills-I  
(2 credits)

#### Choice of Two Electives Courses

Mechanics (3 credits)  
Physics Lab I (1 credit)

Principles of  
Microeconomics (4 credits)

Inorganic Chemistry-I  
(3 credits)  
Basic Inorganic Chemistry  
Laboratory - I (1 credit)

Descriptive Statistics  
(3 credits)  
Practical (1 credit)

Computer Fundamentals &  
Programming in C (3 credits)  
C Programming Lab  
(1 credit)

### Semester II (Minimum 18 credits to be taken)

#### Core Courses

Biology-II Techniques for  
Biology (4 credits)

Calculus-II (4 credits)  
or  
Mathematics-II (4 Credits)

Language and  
Communication Skills-II  
(2 credits)

Information Communication  
Technology (ICT) (2 credits)

#### Choice of Two Electives Courses

Basic Electronics (3 credits)  
Physics Lab II (1 credit)

Principles of  
Macroeconomics (4 credits)

Organic Chemistry-I  
(3 credits)  
Organic Chemistry  
Laboratory - I (1 credit)

Probability and Random  
Variables (3 credits)  
Practical (1 credit)

Object Oriented  
Programming in C++  
(3 credits)  
C++ Programming Lab  
(1 credit)

### Semester III (Minimum 18 credits to be taken)

#### Core Courses

Biology-III Biochemical  
Constituents of Life (4 credits)

Environmental Studies  
(3 credits)

Introduction to Public  
Administration (3 credits)

#### Choice of Two Electives Courses

Modern Physics (4 credits)

Fundamentals of Finance (4  
credits)

Physical Chemistry-I  
(3 credits)  
Physical Chemistry  
Laboratory - I (1 credit)

Probability Distributions  
(3 credits)  
Practical (1 credit)

Data Structures (3 credits)  
Data Structures Lab  
(1 credit)

### Semester IV (Minimum 18 credits to be taken)

Core Courses	Choice of Two Electives Courses [Open electives additional]		
Biology-IV Structural Organization of Life (3 credits) Biology Practical-II (1 credit)	Properties of Matter and Waves (2 credits) Physics Lab III (2 credits)	Issues in Indian Economy (4 credits)	Open Elective (Science) (3 credits)
Science of Environment and Climate (4 credits)	Analytical Chemistry-I (3 credits) Analytical Chemistry Laboratory – I (1 credit)	Statistical Inference-I (3 credits) Practicals (1 credit)	Open Elective (Social Science) (3 credits)
	Database Management System (3 credits) Database Management Lab (1 credit)	Discrete Mathematics (4 credits)	

### Semester V (Minimum 18 credits to be taken)

Core Courses	Choice of Two Open Electives Courses
Environmental Problems (3 credits)	Open Elective (Science) (3 credits)
Environmental Field Methods (3 credits)	Open Elective (Other than Science Departments) (3 credits)
Two courses from Biology	

### Semester VI (Minimum 18 credits to be taken)

Core Courses	Choice of Two Open Electives Courses
Current Trends in Environmental Science (3 credits)	Open Elective (Science) (3 credits)
Project (3 credits)	Open Elective (Other than Science Departments) (3 credits)
Two courses from Biology	



## M.Sc. Environmental Science (2Years)

ECOLOGY AND ENVIRONMENT (4 credits)	INSTRUMENTATION FOR ENVIRONMENTAL MONITORING AND ANALYSIS (4 credits)	ARID ENVIRONMENT AND DESERT METEOROLOGY (4 credits)	ELECTIVE (EX-DISCIPLINE) (4 credits)
ENVIRONMENTAL CHEMISTRY (4 credits)	AIR AND WATER QUALITY MANAGEMENT (4 credits)	ENVIRONMENTAL BIOTECHNOLOGY (4 credits)	<b>Dissertation</b> (16 credits)
ENVIRONMENTAL GEOSCIENCE (4 credits)	REMOTE SENSING AND GIS (4 credits)	ENVIRONMENTAL TOXICOLOGY (4 credits)	
ENVIRONMENTAL POLLUTION (4 credits)	DISCIPLINE ELECTIVE (4 credits)	DISCIPLINE ELECTIVE (4 credits)	
DISCIPLINE ELECTIVE (4 credits)	DISCIPLINE ELECTIVE (4 credits)	INTERNSHIP/SKILL ENHANCEMENT (2 credit)	
	ELECTIVE (EX-DISCIPLINE) (4 credits)	ELECTIVE (EX-DISCIPLINE) (4 credits)	
LABORATORY (2 credits)	LABORATORY (2 credits)	LABORATORY (2 credits)	
FITNESS (0.5 credits) SOCIETAL (0.5 credits)	FITNESS (0.5 credits) SOCIETAL (0.5 credits)	FITNESS (0.5 credits) SOCIETAL (0.5 credits)	FITNESS (0.5 credits) SOCIETAL (0.5 credits)
<b>Total = 23</b>	<b>Total = 27</b>	<b>Total = 25</b>	<b>Total = 21</b>
<b>Total credits = 96</b>			

## M.Sc. (2 Years) Courses credit distribution

### Electives Courses-I

Semester/Year	Courses
<b>I/II (First Year)</b>	Soil Science
	Agro-meteorology
	Waste Water Treatment
	Environmental Disasters and Management
	Solid Waste Management
	Natural Resources, Biodiversity and Wildlife Conservation
	Coastal and Marine Environment
	Environmental Legislation
	Energy and Environment
	Environmental Impact Assessment and Management
	Global Climate Change Science
	Forest Ecology and Management
	Sustainable Agriculture and Environmental Practices
	Environmental Statistics and Computer Programming
Massive Open Online Courses (MOOCs)	

## M.Sc. (2 Years) Courses credit distribution

### Electives Courses-II

Semester/Year	Courses
<b>III/IV(Second Year)</b>	Geo-informatics for Forest Management
	Occupational Hazards
	Water Resource Management
	Aquatic and Chemical Ecology
	Glaciology and Climate Change
	Environmental Stress on Vegetation
Carbon Capture and Sequestration Technology	

# Ph.D. Environmental Science

CORE	ELECTIVES	
<b>RESEARCH METHODOLOGY</b> (4 credits)	<b>RESEARCH REVIEW WRITING AND SEMINAR</b> (4 credits)	<b>WATER RESOURCES AND CLIMATE CHANGE</b> (4 credits)
<b>RESEARCH ETHICS</b> (3 credits)	<b>ADVANCE ANALYTICAL TECHNIQUES</b> (4 credits)	<b>AIR POLLUTION, MONITORING, CONTROL AND EFFECTS</b> (4 Credits)
	<b>ENVIRONMENTAL MICROBIOLOGY &amp; BIOTECHNOLOGY</b> (4 Credits)	<b>Total Credit Requirement: 16</b>
	<b>NANOTECHNOLOGY: ENVIRONMENTAL APPLICATIONS</b> (4 Credits)	
	<b>GEOSPATIAL TECHNOLOGY FOR ENVIRONMENTAL MANAGEMENT</b> (4 Credits)	
	<b>BIOGEOCHEMISTRY</b> (4 Credits)	
	<b>ADVANCES IN GLACIOLOGY</b> (4 Credits)	

# LABORATORY INFRASTRUCTURE

 **Remote Sensing and GIS  
(DST-FIST Supported)**

 **Laboratory of Environmental  
Microbiology**

 **Air-Monitoring Laboratory**

 **Laboratory of Water and Soil  
Analysis**

 **SOPHISTICATED ENVIRONMENTAL  
INSTRUMENTS: Ion-Chromatography,  
UHPLC, UV-Visible Spectrophotometer**



Automatic Weather Station

Air-Monitoring Laboratory



REMOTE SENSING AND GIS LABORATORY (DST-FIST SUPPORTED)



SOPHISTICATED ENVIRONMENTAL INSTRUMENTS



LABORATORY OF ENVIRONMENTAL MICROBIOLOGY



LABORATORY OF WATER AND SOIL



## EXTRACURRICULAR ACTIVITIES

- Celebration of World Ozone Day
- Celebration of Marathon for the awareness of cleanliness
- Tree Plantation and environmental cleanliness drive.
- Celebration of Swachhta Pakhwada
- National Science Day
- World Environment Day

### Departmental Activities



WILDLIFE WEEK



OZONE DAY



PLANTATION

NATIONAL  
SCIENCE DAY



## **FAQs**

**Q1.** What are the eligibility criteria for Integrated M.Sc. and P.G. program?

Integrated M.Sc. Programmes (5 years) eligibility is 10+2 in Science Stream or equivalent of any recognized board in India with Biology and/or Mathematics and Environmental Science P.G. program (2 years) eligibility is a Bachelor's degree from a recognized University in any discipline of Science/ Engineering. [https://cucet.eduapp.co.in/Eligibility%202020-21\\_final.pdf](https://cucet.eduapp.co.in/Eligibility%202020-21_final.pdf)

**Q2.** What is the distribution of credits in the course of the Environmental Science P.G. programme?

Distribution of credits is based on the choice-based credit system (CBCS) guideline comprising core courses: 60%; Discipline Specific Elective: 20%; Ability Enhancement Compulsory Courses: 10%.

**Q3.** What are the credit and duration for the Internship?

Credit -2 and Duration: During summer vacation.

## **CONTACT US**

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### **For admission related queries contact:**

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