

## Learning Outcomes

### B.Sc. Environmental Science

B.Sc. First			
First Semester		Second Semester	
I Paper Earth and Earth Surface process	II Paper Basic Science of Environment	III Paper Development in Environment	IV Paper Issues in Environment
<ol style="list-style-type: none"> <li>1. Define the terms earthquake and fault.</li> <li>2. Describe the processes that can cause earthquakes.</li> <li>3. Students will broadly explore soil erosion to understand the physical mechanisms behind the process of erosion</li> <li>4. Students will: Learn about the vertical profile of the Earth's atmosphere.</li> </ol>	<ol style="list-style-type: none"> <li>1. students will be able to understand application of core physical concepts to the Earth system, with special focus on: Earth rotation, Heat Transfer process atmospheric radiation etc.</li> <li>2. Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical Chemistries</li> <li>3. students will be able to Produce and explain short- and medium-term weather forecasts based on sound meteorological principles.</li> </ol>	<ol style="list-style-type: none"> <li>1. Compare the characteristics of rocks and minerals.</li> <li>2. Classify rocks and minerals.</li> <li>3. Use content-specific vocabulary when discussing rocks and minerals.</li> <li>4. Explain the structure of the atmosphere.</li> <li>5. Define important chemical processes in the stratosphere and troposphere.</li> <li>6. Discuss the role of greenhouse gases on global warming.</li> </ol>	<ol style="list-style-type: none"> <li>1. Understand the natural environment as a system and how human enterprise affects that system</li> <li>2. understand the current evidence for global warming</li> <li>3. understand the current warming in relation to climate changes throughout the Earth's history</li> <li>4. explain factors forcing climate change, and the extent of anthropogenic influence</li> </ol>

## Learning Outcomes

<b>B.Sc. Second</b>			
<b>Third Semester</b>		<b>Fourth Semester</b>	
<b>VI Paper Atmosphere and global Climate Change</b>	<b>VII Paper Water And Fresh Water Resources</b>	<b>VIII Paper Environmental Pollution and Human Health</b>	<b>XI Paper Natural Resource Management</b>
<ol style="list-style-type: none"> <li>1. Gain the knowledge of structure and composition of the Atmosphere and its various processes.</li> <li>2. Understand the issues of air pollution in context to its sources, effects, and control measures.</li> <li>3. Acquire knowledge about climate change issue in context with its phenomenon, causes, effects, and control measures.</li> <li>4. Understand the efforts taken at international level to cope with the issue of climate change by adopting several protocol / agreements.</li> </ol>	<ol style="list-style-type: none"> <li>1. Acquire knowledge about the water resources with its sources and types.</li> <li>2. Gain knowledge regarding the physico-chemical properties of water.</li> <li>3. Understand the importance of water resources in overall development process.</li> <li>4. Understand the water conservation methods.</li> </ol>	<ol style="list-style-type: none"> <li>1. Acquire the scientific knowledge about the various Environmental pollution.</li> <li>2. Understand the effect of Environmental pollution on human health.</li> <li>3. Ability to develop mitigation measures to combat with the challenge of Environmental pollution.</li> </ol>	<ol style="list-style-type: none"> <li>1. Acquire knowledge about the various natural resources, their uses and management.</li> <li>2. Understand the importance of resource management to achieve the goals of sustainability.</li> <li>3. Application of resource management practices for planning and decision making.</li> <li>4. Provide opportunity to think on linkage between resources in environment and process of development</li> </ol>

## Learning Outcomes

<b>B.Sc. Third</b>			
<b>Fifth Semester</b>		<b>Sixth Semester</b>	
<b>XII Paper</b> Water Pollution and Waste Water Analysis	<b>XIII Paper</b> Wild Life Management	<b>XVI Paper</b> Environmental Education and Biodiversity	<b>XVII Paper</b> Environmental Impact and Risk Assessment
<ol style="list-style-type: none"> <li>1. Students will be able to understand the concept of water pollution.</li> <li>2. Students will be able to identify the sources of water pollution.</li> <li>3. They will be capable to analyze the waste water at any laboratory.</li> <li>4. They can make people aware about their individual and social health.</li> <li>5. They will be able to maintain the individual health and sanitation at public place.</li> <li>6. Understand the importance of availability and use of water.</li> </ol>	<ol style="list-style-type: none"> <li>1. The attention of the student increases on the need of environmental management and wildlife conservation.</li> <li>2. The attention of the student increases on Human wildlife coexistence and Man and biosphere programs.</li> <li>3. The student achieves basic knowledge on Wildlife conflicts with few case studies.</li> </ol>	<ol style="list-style-type: none"> <li>1. Understand the concept and modes of environmental education.</li> <li>2. Systematically understand biodiversity and its vital role in functioning of ecosystem</li> <li>3. Study the importance of biodiversity in human welfare point of view.</li> <li>4. Understand the methods of biodiversity conservation.</li> </ol>	<ol style="list-style-type: none"> <li>1. To understand the history of EA in fostering public engagement in environmental governance</li> <li>2. To critically examine assumptions inherent in Environmental Impact Assessment.</li> <li>3. To develop skills in identifying and solving problems</li> <li>4. To consolidate the knowledge and skills essential to a career or further research in environmental impact assessment.</li> <li>5. To understand the approach to risk Management through risk identification.</li> </ol>

## Learning Outcomes

### M.Sc. Environmental Science

M.Sc. First			
First Semester			
401 Paper Environmental Dynamics	402 Paper Environmental Chemistry	403 Paper Waste Water Treatment Technology	404 Paper Environmental Resources
<ol style="list-style-type: none"> <li>1. be able to outline different concepts of biodiversity and discuss spatial and temporal aspects of biodiversity</li> <li>2. be able to explain the basic causes behind the ongoing global decline in biodiversity based on recent research</li> <li>3. be able to outline and apply different perspectives and questions within conservation biology related to biodiversity</li> <li>4. be able to outline the biodiversity and ecosystem services concepts and their relevance for management of natural resources and a sustainable development</li> </ol>	<ol style="list-style-type: none"> <li>1. Demonstrate knowledge of chemical and biochemical principles of fundamental environmental processes in air, water, and soil.</li> <li>2. Recognize different types of toxic substances &amp; responses and analyze toxicological information.</li> <li>3. Apply basic chemical concepts to analyze chemical processes involved in different environmental problems (air, water &amp; soil).</li> <li>4. Describe water purification and waste treatment processes and the practical chemistry involved.</li> <li>5. Describe causes and effects of environmental pollution by energy industry and discuss some mitigation strategies.</li> <li>6. Explain energy crisis and different aspects of sustainability.</li> <li>7. Discuss local and global environmental issues based on the knowledge gained throughout the course</li> </ol>	<ol style="list-style-type: none"> <li>1. Working knowledge of water quality characteristics of water sources including: Groundwater sources, Aquifers, Surface Water sources, Reservoir characteristics, Watersheds, Wells, Raw Water and Clear Well Storage.</li> <li>2. Ability to describe the purpose and operational steps of key water treatment processes used to improve water quality including: Coagulation, Flocculation.</li> <li>3. make the project planning.</li> <li>4. explain unit operation and processes and biologic treatment methods.</li> <li>5. draw treatment schemes such as Activated sludge system, trickling filter, stabilization ponds.</li> <li>6. list the important points for the selection of wastewater treatment systems.</li> <li>7. calculate the flow rates required for wastewater treatment plant design.</li> </ol>	<ol style="list-style-type: none"> <li>1. Explain Forest Resources •</li> <li>2. Discuss the use and over-exploitation Forest Resources</li> <li>3. Describe Deforestation</li> <li>4. Explain the effect of Timber extraction, mining, dams on forests and tribal people</li> <li>5. know the principles of evolution, and wildlife and conservation biology and how they are used to manage wildlife and solve environmental problems;</li> <li>6. To be able to classify different minerals and rocks relevant to resources</li> <li>7. To be able to understand how and why different types of mineral deposits are formed</li> </ol>

## Learning Outcomes

<b>M.Sc. First</b>			
<b>Second Semester</b>			
<b>406 Paper Environmental Biotechnology &amp; Waste Management</b>	<b>407 Paper Air pollution and Climatology</b>	<b>408 Paper Toxicology and hazardous waste management</b>	<b>409 Paper Instrumentation For Environmental Monitoring and Analysis</b>
<ol style="list-style-type: none"> <li>1. Understand and assimilate the specific concepts and terminology of environmental biotechnology.</li> <li>2. Find and manage information from various sources</li> <li>3. Describe the scientific bases that are applied by environmental biotechnology.</li> <li>4. Describe the properties of microorganisms with potential application to environmental biotechnology processes.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify the major sources and sinks of air pollutants.</li> <li>2. Understand the key chemical transformations of air pollution.</li> <li>3. Relate air pollution regulation and its scientific basis.</li> <li>4. explains meteorology terms - temperature, heat, thermometer, inversion, humidity, pressure, pressure instruments</li> </ol>	<ol style="list-style-type: none"> <li>1. Students will demonstrate an understanding of the core concepts of the science of toxicology</li> <li>2. Explain integrated hazardous waste management</li> <li>3. Assess hazardous treatment and disposal</li> </ol>	<ol style="list-style-type: none"> <li>1. Practice methods of laboratory and field data collection, including the operation of</li> <li>2. standard sampling equipment and instruments</li> <li>3. Understand the history, operation, and use of meteorological instruments that monitor the</li> <li>4. atmosphere, with emphasis on practical applications.</li> <li>5. Determine appropriate chromatographic technique and approach for analysis.</li> <li>6. Comprehend the optimization of chromatographic methods.</li> <li>7. Explain what it means to use spectroscopic methods for qualitative and quantitative analysis.</li> </ol>

## Learning Outcomes

<b>M.Sc. Second</b>			
<b>Third Semester</b>			
<b>501 PAPER Environmental Microbiology</b>	<b>502 Pape Remote Sensing and G. I. S.</b>	<b>503 Paper Biostatistics and Computational Techniques</b>	<b>504 Paper Soil pollution &amp; solid waste Management</b>
<ol style="list-style-type: none"> <li>1. Students will master in Basics of Microbiology</li> <li>2. Master in understanding the Importance of microbes in Environmental interactions.</li> <li>3. Master in advances in microbiology and their application in environmental problem solving.</li> <li>4. Understand the Industrial microbiological processes.</li> </ol>	<ol style="list-style-type: none"> <li>1. Understand the principles of aerial and satellite remote sensing, Able to comprehend the energy interactions with earth surface features, spectral properties of water bodies.</li> <li>2. Understand the basic concept of GIS and its applications, know different types of data representation in GIS</li> <li>3. Understand and Develop models for GIS spatial Analysis and will be able to know what the questions that GIS can answer are</li> <li>4. Apply knowledge of GIS software and able to work with GIS software in various application fields</li> <li>5. Illustrate spatial and non-spatial data features in GIS and understand the map projections and coordinates systems</li> <li>6. Apply knowledge of GIS and understand the integration of Remote Sensing and GIS</li> </ol>	<ol style="list-style-type: none"> <li>1. define the principal concepts about biostatistics.</li> <li>2. recognize the definition of statistics, its subject and its relation with the other sciences.</li> <li>3. restate the principal concepts about biostatistics.</li> <li>4. collect data relating to variable/variables which will be examined and calculate descriptive statistics from these data.</li> <li>5. students will be able to: Recognize when to use each of the Microsoft Office programs to create professional and academic documents.</li> </ol>	<ol style="list-style-type: none"> <li>01. Get the idea of different types of soils in India and world.</li> <li>02. Identify the sources and detrimental effects of soil pollution</li> <li>03. Master in monitoring and analysis and pollution control of soil.</li> <li>04. Apprehend the knowledge about solid waste and its management.</li> </ol>

## Learning Outcomes

<b>M.Sc. Second</b>			
<b>Fourth Semester</b>			
<b>506 Paper Environmental Impact Assessment and Disaster management</b>	<b>507 Paper Occupational health, safety &amp; Management</b>	<b>508 Paper Environmental policies, laws, and Ethics</b>	<b>509 Paper Environmentally sustainable Development</b>
<ol style="list-style-type: none"> <li>1 perform the screening and scoping of an EIA, based on existing requirements</li> <li>2 evaluate the impacts and draw meaningful conclusions from the results of the EIA;</li> <li>3 perform a critical quality review of an EIA and EIS;</li> <li>4 Learners will gain exposure to the concepts underpinning the management of disasters, practical processes involved in the management of disasters</li> </ol>	<ol style="list-style-type: none"> <li>1. Aware of basics of Occupational health and safety.</li> <li>2. Identify hazards and risks.</li> <li>3. Master in handling accidents in industry.</li> <li>4. Able to work for industrial safety management</li> </ol>	<ol style="list-style-type: none"> <li>1. Students will be able to get basic knowledge of environment, pollution, and various principles.</li> <li>2. Students will be able to get the knowledge about Constitutional provisions for the protection of environment.</li> <li>3. Students will learn about the legal provisions of the water pollution.</li> <li>4. Students will also learn about the air pollution.</li> <li>5. Students will get the knowledge about the Environment (protection) Act, powers of central government and state government to make laws and Environment Tribunals</li> <li>6. Demonstrate an understanding of how scientific principles and ethical systems can be conjoined to foster environmental awareness and develop practical solutions to environmental problems.</li> </ol>	<ol style="list-style-type: none"> <li>01. Understand the basics of the sustainable development.</li> <li>02. Have the knowledge of sustainable practices.</li> <li>03. Get the idea of challenges of sustainable development</li> <li>04. Achieve the knowledge about indicators of sustainable development.</li> </ol>