

S. R. Fatepuria College
Department of Environmental Science
Course Name: B.Sc. (Hons.) Environmental Science

Programme Outcomes (POs)

This program helps to acquire in depth knowledge about all the components of the environment and their interactions with each other. It also helps to understand the significance of the environment for the existence of mankind as well as the total biota in the earth. Thus by evolving new thoughts modern technology and modification of systems to sustain the environment as well as satisfy the overall growing development.

This program of a higher studies viz. M.Sc. in environmental science, M.Tech in environmental science, PhD, Post doctorate etc. Beside these, this program also offers different types of internships, researches on the environment in different government organisations as well as private institutions. It provides opportunities for teaching Environmental science in schools, colleges and university level.

Now a days, the importance of environmental awareness increases day by day. The industries and different corporate sectors are bounded by environmental acts and laws to maintain the environment health. So, there is a huge scope of absorption of students from Environmental Science background.

Lastly this program can address the present critical environment related issues and challenges like unusual catastrophic incidence, Waste management, pollution, biodiversity loss, scarcity of energy etc with clear conceptual knowledge about environment and innovative ideas.

Thus environmental health and development will flourish hand in hand.

Course Outcomes (COs)

SEMESTER – I

CORE COURSE 01 (Code: UG-ENVS-H-CC-01)

EARTH AND EARTH SURFACE PROCESSES

Course Outcome: The paper will introduce students to the basic structure and composition of the earth and will explore various surface processes and their impact and role in living systems. It will also deal with the interactive processes in the inner as well as outer Earth's surface.

CORE COURSE 02: (Code: UG-ENVS-H-CC-02)

Environmental Chemistry and Environmental Physics

Course Outcome: This paper aims to build conceptual understanding of students by exposing them to the basic principles behind various environmental processes. The paper has been divided into two sections, with the view to introduce students to the concepts of chemistry and physics associated with particle movement, chemical processes and pollutant chemistry.

GENERIC ELECTIVE 01 (Code: UG-ENVS-H-GE-01)

ENVIRONMENT AND SOCIETY

Course Outcome: The course examines the relationship between the environment and society enabling the students to understand and appreciate the role played by environment, society, and, their interface in shaping environmental decisions. The students will be enabled to think critically on environmental issues.

SEMESTER – II

CORE COURSE 03 (Code: UG-ENVS-H-CC-03)

WATER AND WATER RESOURCES

Course Outcome: The paper introduces students to the hydrological cycle, properties of water, physico-chemical and biological water quality assessment and indices, types of water resources, their use and management. It will also highlight the problems associated with water shortages in India and familiarizes students with case studies on international and national conflicts on water.

CORE COURSE 4 (Code: UG-ENVS-H-CC-04)

LAND AND SOIL CONSERVATION AND MANAGEMENT

Course Outcome: This paper introduces students to the fundamentals of land and soil degradation. Each unit covers a range of topics, which will help students develop basic understanding of properties of soil and how the quality of land and soil degrades due to anthropogenic activities.

GENERIC ELECTIVE 02 (Code: UG-ENVS-H-GE-02)

WILDLIFE MANAGEMENT

Course Outcome: This paper deals with the conflicts that have arisen as a result of shrinkage of wildlife habitats and the same being shared by human communities. It raises questions about the moral obligations of humans, need for conservation, and social impacts of conflicts. The paper aims at introducing the students to the scientific and social perspective of conservation.

SEMESTER – III

CORE COURSE 5 (Code: UG-ENVS-H-CC-05)

ECOLOGY AND ECOSYSTEMS

Course Outcome: This paper will introduce to the students the basic understanding of ecosystem and its structural and functional aspects. It will explore the interconnectedness among all the biotic and abiotic components of environment and the dynamic nature of the ecological processes in maintaining equilibrium in nature.

CORE COURSE 06 (Code: UG-ENVS-H-CC-06)

BIODIVERSITY AND CONSERVATION

Course Outcome: This course is aimed at helping students to understand and appreciate various concepts and issues concerning biodiversity and conservation at local, regional and global levels. The course will attempt at encouraging students to appreciate the paradigm “think globally, act locally” for a sustainable common future of humankind.

CORE COURSE 07 (Code: UG-ENVS-H-CC-07)

ATMOSPHERE AND GLOBAL CLIMATE CHANGE

Course Outcome: The paper deals with dynamics of atmospheric processes, which include its composition, meteorological phenomena and atmospheric chemistry. The paper also highlights the anthropogenic intervention in ‘anthropocene’, which has led to global climate change. The paper also explores effects of global changes on human communities and initiatives taken at global and regional levels to combat them.

SKILL ENHANCEMENT COURSE 01 (Code: UG-ENVS-H- SEC-01a)

REMOTE SENSING, GEOGRAPHIC INFORMATION SYSTEM & MODELLING

Course Outcome: This course introduces the students to various computer-based and statistical methods used for study and management of natural resources and the environment. The students are expected to learn about remote-sensing techniques, physical principles, sampling, statistics and image-analysis methods.

-OR-

SKILL ENHANCEMENT COURSE 01: (Code: UG-ENVS-H- SEC- 01b)

OCCUPATIONAL HEALTH AND ENVIRONMENTAL SAFETY

Course Outcome: This course introduces the students to acquire knowledge about various occupational diseases and safety measures with particular attention to accident prevention in work place, safety education and training.

GENERIC ELECTIVE 03 (Code: UG-ENVS-H-GE -03)

GENDER AND ENVIRONMENT

Course Outcome: The paper is designed to expose students to the concept of gender in society and its relevance in the environmental context. The principal objective of the course is to enable students to examine environmental issues from a gender-sensitized perspective.

SEMESTER – IV

CORE COURSE 08 (Code: UG-ENVS-H-CC-08)

BIO-SYSTEMATICS AND BIOGEOGRAPHY

Course Outcome: This course will discuss principles and applications of classical and modern day systematics to classification of living organisms, develop understanding of historical and contemporary patterns of distributions of organisms, and design effective conservation strategies using biogeographic theories in an era of global change and large scale human induced degradation.

CORE COURSE 09 (Code: UG-ENVS-H-CC-09)

NATURAL RESOURCE MANAGEMENT AND SUSTAINABILITY

Course Outcome: This paper takes an objective view of the nature of Earth's resources, their generation, extraction and impact of human activities on earth's environment. The students are expected to understand effective management strategies. It aims to provide an idea of effective management strategies and a critical insight of the major sustainability issues.

CORE COURSE 10 (Code: UG-ENVS-H-CC-10)

ENVIRONMENTAL POLLUTION AND HUMAN HEALTH

Course Outcome: This paper deals with different aspects of environmental contamination, which have adverse effects on human health. It will lay emphasis on understanding mechanisms of pollutants impacting human health by developing an understanding of different types of pollutants, their sources and mitigation measures. The students will also be introduced to the concept of permissible limits.

SKILL ENHANCEMENT COURSE 02 (Code: UG-ENVS-H-SEC-02a)

ENVIRONMENTAL IMPACT AND RISK ASSESSMENT

Course Outcome: This course recognizes the growing need of industry to anticipate and incorporate environmental concerns and risks while developing large-scale projects. The course emphasizes on the contemporary tools and techniques to assess various environmental impacts and outlines various management options needed to mitigate these risks.

-OR-

SKILL ENHANCEMENT COURSE 02 (Code: UG-ENVS-H- SEC -02b)

ENVIRONMENTAL QUALITY MONITORING AND ASSESSMENT

Course Outcome: This paper deals with environmental quality monitoring and assessment. An attempt will be made to have a compressive idea about different aspects of environmental contamination, with special emphasis on air, water, soil and noise qualities, perturbation of which may have adverse effects on environmental and human health. It will lay emphasis on understanding mechanisms of pollutants impact on human health by developing an understanding of different types of pollutants, their sources and mitigation measures. The students will also be introduced to the concept of standards and permissible limits.

GENERIC ELECTIVE 04 (Code: UG-ENVS-H-GE-04)

GREEN CHEMISTRY, GREEN TECHNOLOGY AND APPLICATIONS

Course Outcome: This paper introduces students to the concept of green technology, its goals and advantages. It also highlights potential role of green technologies in realizing the goal of sustainable development and focuses on community participation to tap the economic benefits associated with switching to green technologies.

SEMESTER – V

CORE COURSE 11 (Code: UG-ENVS-H-CC-11)

ENVIRONMENTAL BIOTECHNOLOGY

Course Outcome: This paper presents an objective view of the application of biotechnological know-hows in tackling environmental problems. It starts with basic knowledge about molecular biology and later links to application based processes and techniques.

CORECOURSE 12 (Code: UG-ENVS-H-CC-12)

EVOLUTIONARY BIOLOGY

Course Outcome: This paper introduces students to the fundamentals of ecology and evolutionary biology. Each unit covers vast range of topics, which will help the students to develop basic concepts of ecology and evolutionary biology.

DISCIPLINE SPECIFIC ELECTIVE 01 (Code: UG-ENVS-H-DSE -01a)

ENERGY AND ENVIRONMENT

Course Outcome: This course aims to provide students with a broad understanding of the existing energy resources, issues related to energy and the environment, challenges and possible paths to sustainable energy generation and use.

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DISCIPLINE SPECIFIC ELECTIVE 01 (Code: UG-ENVS-H-DSE- 01b)

ECOTOXICOLOGY AND ENVIRONMENTAL HEALTH

Course Outcome: This chapter deals with basic concepts of toxicology, categories of toxicants, their sources, action and effects. It will also consider the preventive and curative measures to reverse toxic impact and maintenance of environmental health.

DISCIPLINE SPECIFIC ELECTIVE 02 (Code: UG-ENVS-H-DSE-02a)

ENVIRONMENTAL ECONOMICS

Course Outcome: This paper introduces students to the fundamentals of environmental economics. It covers some basic concepts of economics to familiarize students with absence of market, demand and supply in nature. Each unit covers a range of topics, which will help students to develop modern concepts of environmental economics and its importance in conservation of biodiversity and ecosystems through understanding of economic costs associated with these.

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DISCIPLINE SPECIFIC ELECTIVE 02 (Code: UG-ENVS-H-DSE-02b)

WASTE AND WASTEWATER MANAGEMENT

Course Outcome: Every human activity ends up in the generation of unwanted waste product. This paper throws light on the current scenario of waste and waste water generation, problems in handling and management. It also deals with the different governmental policies for proper management in order to minimize their effect on environment.

SEMESTER – VI

CORE COURSE 13 (Code: UG-ENVS-H-CC-13)

ENVIRONMENTAL LEGISLATION AND POLICY

Course Outcome: This paper introduces students to the legal structure of India and fundamentals of environmental legislation and policy making. Each unit will help the students to develop basic concepts of environmental legislation and policy making in India and around the world.

CORECOURSE-14 (Code: UG-ENVS-H-CC-14)

URBAN ECOSYSTEMS

Course Outcome: The paper is designed to enable the students to examine the existing environmental issues, conflicts and their potential role in urban development. It beholds importance as interaction between urban society and its environment transpires in governance and policy decisions. It also aims to address key challenges posed by increasing development to far-reaching goal of sustainability in urban areas.

DISCIPLINE SPECIFIC ELECTIVE 03 (Code: UG-ENVS-H-DSE- 03a)

NATURAL HAZARDS AND DISASTER MANAGEMENT

Course Outcome: This paper introduces the students to various aspects of environmental hazards, their causes, classifications, and impacts. It also focuses on the management strategies and governmental action plan to mitigate and prepare for such hazards.

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DISCIPLINE SPECIFIC ELECTIVE 03 (Code: UG-ENVS-H-DSE-03b)

INSTRUMENTAL TECHNIQUES FOR ENVIRONMENTAL ANALYSIS

Course Outcome: This paper introduces the students to various instrumental techniques for environmental analysis along with their principle and applications. An attempt will be made to have a compressive idea about various sampling techniques along with sample preparation. The students will also be introduced to the concept of radioactivity detection techniques and their applications.

DISCIPLINE SPECIFIC ELECTIVE 04 (Code: UG-ENVS-H-DSE-04)

DISSERTATION