ENVIRONMETAL SCIENCES: PROGRAMME OUTCOME

Currently the college offers a compulsory Value Added Course in semesters I and II and Skill Enhancement Course in semesters I, II and III

PROGRAMME OUTCOMES

- **PO1-Disciplinary Knowledge:** Enable students to develop a comprehensive understanding of various facets of life forms, ecological processes and how humans have impacted them during the Anthropocene era.
- **PO2-Critical Thinking Capability:** To identify relevant environmental issues, analyse the various underlying causes, evaluate the practices and policies, and develop framework to make informed decisions.
- **PO3-Moral and Ethical Awareness/Reasoning:** Develop empathy for various life forms and appreciate the various ecological linkages within the web of life.

PROGRAMME SPECIFIC OUTCOMES

- **PSO1-** Gain in-depth knowledge on natural processes and resources that sustain life and economy.
- **PSO2-** Understand the consequences of human actions on the web of life, global economy and quality of human life.
- **PSO3-** Develop critical thinking for shaping strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development.
- **PSO4-** Acquire values and attitudes towards understanding complex environmental economic- social challenges, and active participation in solving current environmental problems and preventing the future ones.
- **PSO5-** Adopt sustainability as a practice in life, society, and industry.

COURSE OUTCOMES

Environmental Education (Value added Course)

The Value Added course on Environmental Education aims to train students to cater to the need for ecological citizenship through developing a strong foundation on the critical linkages between ecology-society-economy. After studying the course, students must understand and explain the following:

- **CO1-**Multidisciplinary nature of environmental studies
- **CO2-**Scope and importance; Concept of sustainability and sustainable development
- **CO3-**Concept and types of Ecosystem Structure of ecosystem (biotic and abiotic components); Functions of Ecosystem. Physical (energy flow), Biological (food chains, food web, ecological succession) and Biogeochemical (nutrient cycling) processes.
- **CO4-**Concepts of productivity, ecological pyramids and homeostasis
- **CO5-**Ecosystem services (Provisioning, Regulating, Cultural and Supporting).
- **CO6-**Land resources and land-use change
- **CO7-**Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs
- **CO8-**Concept and levels of biological diversity
- **CO9-**Biogeographic zones of India, India as a mega-biodiversity nation; Endemic and endangered species of India; IUCN Red list; biodiversity hotspots
- **CO10-**Ecological, economic, social, ethical, aesthetic and informational value of biodiversity with examples
- **CO11-**Threats to biodiversity
- **CO12-**Biodiversity conservation strategies: in-situ and ex-situ methods of conservation; Biosphere reserves; Keystone and Flagship species; Species reintroduction and translocation

Green Technology (Skill Enhancement course)

The students will be able to understand the following:

- **CO1-** Green technology: past and present
- **CO2-**Green energy
- **CO3-**Green infrastructure
- **CO4-**Green economy and green chemistry
- **CO5-**Green planning
- **CO6-**Ecomark certification
- **CO7-**Life cycle assessment
- **CO8-**Carbon capture and storage

Liquid Waste Management (Skill Enhancement course)

The course content should be taught and practical should be carried out in such a way that students are able to acquire knowledge about different aspects of solid waste and their disposal. After completing the course, students must be able to:

- **CO1-**Understand basics of waste management
- **CO2-**Acquire knowledge about waste treatment technologies 3
- **CO3-**Know the need for integrated waste management
- **CO4-**Get acquaintance with waste management systems
- **CO5-**Role of economics in waste handling
- **CO6-**Identify the types and sources of liquid waste.
- **CO7-**Describe some different methods of liquid waste disposal.
- **CO8-**Identify issues to be considered when choosing sanitation technologies.

Solid Waste Management (Skill Enhancement course)

After completing the course, the students must be able to:

- **CO1-** Outline sources, types and composition of solid wastes
- **CO2-**Select the appropriate method of waste collection, transportation, redistribution and disposal
- **CO3-**Describe methods of disposal of hazardous solid wastes
- **CO4-**Discuss Municipal solid waste management system
- **CO5-**Study the linkage between economic growth and pollution