K.M.G. COLLEGE OF ARTS AND SCIENCE

(AUTONOMOUS)

Approved by the Government of Tamil Nadu
Permanently Affiliated to Thiruvalluvar University, Vellore.
Recognized under Section 2(f) and 12(B) of the UGC Act 1956
Accredited by NAAC (2nd Cycle) with (CGPA of 3.24/4) 'A' Grade

ENVIRONMENTAL SCIENCE

(FOR ALL UG PROGRAMMES)

SYLLABUS FOR III SEMESTER

(CHOICE BASED CREDIT SYSTEM)

Under

LEARNING OUTCOMES-BASED CURRICULUM

FRAMEWORK (LOCF)

(Effective for the Batch of Students Admitted from 2024-2025)

COURSE DESCRIPTORS

Title of the Course	Environmental Science	**Hours/Week**	2
Course Code	AUES30	**Credits**	2
Category	Compulsory	**Year & Semester**	II & III
Prerequisites	Basic Science about the Environment	**Regulation**	2024

Objectives of the course:

- To educate people about environmental issues and challenges.
- To provide information about the ecosystem and pollutions in environment.
- To motivate people to take action to protect and improve the environment.
- To encourage the equitable and sustainable use of resources

UNITS	Contents	COs	Cognitive Levels
UNIT-I	**INTRODUCTION TO ENVIRONMENTAL SCIENCES:** NATURAL RESOURCES: Environmental Sciences - Relevance - Significance - Public awareness - Forest resources - Water resources - Mineral resources - Food resources - conflicts over resource sharing - Exploitation - Land use pattern - Environmental impact - fertilizer - Pesticide Problems - case studies.	CO1	K1, K2,
UNIT-II	**ECOSYSTEM, BIODIVERSITY AND ITS CONSERVATION:** Ecosystem - concept - structure and function - producers, consumers and decomposers - Food chain - Food web - Ecological pyramids - Energy flow - Forest, Grassland, desert and aquatic ecosystem. Biodiversity - Definition - genetic, species and ecosystem diversity - Values and uses of biodiversity - biodiversity at global, national (India) and local levels - Hotspots, threats to biodiversity - conservation of biodiversity - Insitu & Exsitu.	CO1, CO2	K1, K2, K3

UNIT-III	**ENVIRONMENTAL POLLUTION AND MANAGEMENT:** Environmental Pollution - Causes - Effects and control measures of Air, Water, Marine, soil, solid waste, Thermal, Nuclear pollution and Disaster Management - Floods, Earth quake, Cyclone and Landslides. Role of individuals in prevention of pollution - pollution case studies.	CO1, CO3	K1, K2, K3, K4
UNIT-IV	**SOCIAL ISSUES - HUMAN POPULATION** Urban issues - Energy - water conservation - Environmental Ethics - Global warming - Resettlement and Rehabilitation issues - Environmental legislations – Environmental production Act. 1986 - Air, Water, Wildlife and forest conservation Act - Population growth and Explosion - Human rights and Value Education - Environmental Health - HIV/AIDS - Role of IT in Environment and Human Health - Women and child welfare - Public awareness - Case studies.	CO1, CO3 CO4	K3, K4
UNIT-V	**FIELD WORK** Visit to a local area / local polluted site / local simple ecosystem - Report submission	CO1 CO3 CO4	K3, K4, K5

Recommended Text Books

1. *Connell, D.W. 2005. Basic Concepts of Environmental Chemistry (2nd edition). CRC Press.*
2. *Pani, B. 2007. Textbook of Environmental Chemistry. IK international Publishing House.*
3. *Asthana, D. K. (2006).Text Book of Environmental Studies. S. Chand Publishing.*
4. *Basu, M., Xavier, S. (2016). Fundamentals of Environmental Studies, Cambridge University Press, India.*

Reference Books

1. *Carson, R. 2002. Silent Spring. Houghton Mifflin Harcourt.*
2. *Gadgil, M., & Guha, R.1993. This Fissured Land: An Ecological History of India. Univ. of California Press.*
3. *Gleeson,B. and Low, N. (eds.) 1999. Global Ethics and Environment, London, Routledge.*
4. *Gleick, P.H. 1993. Water in Crisis. Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute, Oxford Univ. Press.*

5. *Groom, Martha J. Gary K. Meffe, and Carl Ronald carroll. Principles of Conservation Biology. Sunderland: Sinauer Associates, 2006.*

6. *Grumbine, R. Edward, and Pandit, M.K. 2013. Threats from India's Himalaya dams. Science, 339: 36-37.*

7. *McCully, P.1996. Rivers no more: the environmental effects of dams(pp. 29-64). Zed Books.*

8. *McNeil, John R. 2000. Something New Under the Sun: An Environmental History of the Twentieth Century.*

Website and e-learning source

www.nacwc.nic.in

www.opcw.org

Course Learning Outcomes (for Mapping with POs and PSOs)

On completion of the course the students should be able to

COs	CO Description	Cognitive Level
CO1	Understand the Environment and natural resources.	K1, K2,
CO2	Explain the ecosystems, biodiversity and their conservation.	K1, K2, K3
CO3	Identify the causes and effects of environmental pollution.	K1, K2, K3,K4
CO4	Measure the social impacts of human population	K3,K4
CO5	Made a report about the environmental issues.	K3,K4,K5

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	3	3	1	1	-	-	-	-	-	1	3	-	1
CO2	3	3	2	1	-	-	-	-	-	2	3	-	1
CO3	3	3	3	2	2	-	-	2	-	3	3	-	2
CO4	3	3	3	3	3	-	-	3	-	2	3	-	2
CO5	3	3	3	3	3	-	-	3	-	3	3	2	2