	National Institute of Technology Meghalaya An Institute of National Importance	CURRICULUM

Programme	**Master of Technology**	Year of Regulation	**2025**
Department	**Civil Engineering**	Semester	**I**

Course Code	Course Name	Pre-requisite	Credit Structure				Marks Distribution			
			L	T	P	C	INT	MID	END	Total
CE 573	**Indian Knowledge System**	**NIL**	**3**	**0**	**0**	**3**	**50**	**50**	**100**	**200**

Course Objectives		Course Outcomes		
1. To introduce students to the foundational concepts and holistic perspective of Indian Knowledge Systems (IKS). 2. To explore India's traditional environmental practices, water and agriculture management, and ecological wisdom. 3. To understand ancient scientific, architectural, and philosophical contributions relevant to sustainable living. 4. To highlight the relevance of IKS in addressing modern-day environmental and engineering challenges. 5. To foster appreciation of indigenous knowledge and its integration with modern science			CO1	Able to understand the core principles and philosophical foundations of Indian Knowledge Systems.
			CO2	Able to analyze traditional environmental practices, especially in water, agriculture, and sustainable living.
			CO3	Able to apply insights from IKS to promote ecological balance and sustainability in engineering solutions.
			CO4	Able to recognize the scientific, mathematical, and technological contributions of ancient Indian texts.
			CO5	Able to integrate indigenous knowledge with modern environmental engineering practices and policies.

SYLLABUS

No.	Content	Hours	COs
I	**Introduction to Indian Knowledge Systems:** Meaning and scope of IKS; Historical development and literature sources (Vedas, Upanishads, Smritis, Puranas); Schools of Indian philosophy (Nyaya, Vaisheshika, Samkhya, Yoga, Vedanta); Holistic approach of Indian sciences	6	CO1, CO2
II	**Indian Environmental Ethics and Ecology:** Concept of Panchabhuta (five elements) and environmental harmony; Sacred groves, rivers, and mountains: traditional conservation practices; Indigenous biodiversity management; Meghalaya ecological system.	6	CO2, CO3, CO4
III	**Traditional Water and Agricultural Systems:** Ancient water harvesting and irrigation systems (Johads, stepwells, tanks, canals); water harvesting techniques in Meghalaya, Soil and water conservation in ancient India, and Meghalaya; Vrikshayurveda – plant science and agriculture; Sustainable farming techniques in ancient texts, irrigation practices in Meghalaya.	5	CO2, CO3, CO4
IV	**Indigenous Architecture and Urban Planning:** Vastu Shastra and eco-friendly architectural principles; Traditional urban water and waste systems; Climatic design in temples and settlements; Energy-efficient and resilient structures, Characteristics of Assam and Meghalaya houses	7	CO2, CO3, CO4
V	**Scientific and Mathematical Contributions:** Ancient Indian contributions in astronomy, mathematics, metallurgy, and chemistry; Texts like Sulbasutras, Aryabhatiya, Charaka Samhita, and Rasaratnakara; Indigenous technologies in metallurgy and sanitation; Role of Indian logic (Nyaya) in scientific inquiry	9	CO4, CO5
VI	**Relevance of IKS in Modern Context:** Integrating IKS with environmental engineering practices; National Education Policy (NEP) 2020 and IKS; Case studies of successful IKS applications in climate resilience, water management; Policy implications and future directions	9	CO4, CO5
Total Hours		**42**	

Essential Readings

1. Michel Danino – The Indian Mind Then and Now, 2000
2. Kapil Kapoor – Text and Interpretation: The Indian Tradition, 2005
3. Nair, Shantha N. Echoes of Ancient Indian Wisdom. New Delhi: Hindology Books, 2008
4. Avari, B. India: The Ancient Past: A History of the Indian Subcontinent from c. 7000 BCE to CE 1200. London: Routledge, 2016
5. R P Kulkarni, Glimpese of Indian Engineering and Technology (Ancient & Medieval period, Munshiram Manoharlal Publishers Pvt. Ltd. 2018

Supplementary Readings

1. IKS Division (Ministry of Education), AICTE resources
2. Selected readings from Indian classics: *Manusmriti*, *Charaka Samhita*, *Vrikshayurveda*
3. Swami BB Vishnu, Vedic Science and History - Ancient Indian's Contribution to the Modern World, gosai publication, 2015