Syllabus

Indian Knowledge System for Environmental Conservation and Management

Paper Code MES – 112 (Lectures-Tutorials-Practical/Week (3-1-0) Credit 4

Course Marks (Mid-End-Total) (40-60-100)

Objectives:

- To examine the interrelationship between Bharat's civilizational wisdom, nature, and natural resources, and to analyze the traditional conservation ethics, ideas, and practices that have been prevalent since the Vedic period.
- To evaluate the significance of indigenous knowledge systems in promoting sustainability and ecological balance while highlighting the continuity and relevance of cultural traditions in shaping human–nature interactions.
- Aspires to integrate insights from traditional wisdom with contemporary approaches to environmental conservation and resource management.

Outcome of the course:

- students will be able to understand and demonstrate the interconnections between Bharat's civilizational wisdom, nature, and natural resources.
- They will be able to explain the principles and practices of traditional conservation approaches rooted in the Vedic and post-Vedic periods, and critically evaluate the relevance of indigenous knowledge systems in addressing contemporary challenges of environment and sustainability.
- Enables students to interpret the role of cultural traditions and philosophical thought in shaping ecological ethics and human–nature relationships for land and forest conservation.
- They will be able to apply insights from Indian knowledge systems to complement modern strategies of sustainable development climate mitigation and resource management.
- Will have deep understanding of Indian architecture in environmental sustainability.

Course Description:

Unit I: Introduction to IKS, various fields in traditional Indian Knowledge system and the idea of 'vashudhaiv kutumbakam' in environmental conservation; Formation, characteristics and qualities of five elements of Nature; Earth and Atmosphere; Astronomical foundation concepts of solar system, and meteors; Environment components and related practices in scriptures; Current need of IKS for sustainability and SDGs.

Unit II: Indian perspectives on health and lifestyle management: Science of Habits, Food intake methods, Home remedies; Medicinal plant wealth of India, threats and conservation; Sacred grove and their role in conservation, Case study of the traditional understanding and protection of sacred groves.

Unit III: Land resource and management: Major Forest types of India; Overview of import vegetation types across India; principle of Ahimsa in biodiversity conservation.

Unit IV: Rural-indigenous water management practices: stepwells (baolis), check dams (johads) and tank irrigation. Vedic agricultural practices: organic farming, crop rotation and benefits of natural fertilizer. Role of Indian Indigenous and traditional knowledge in climate sustainability and geoscience. Cultural transitional changes and their impact on climate change and geoscience.

Unit V: Architecture and Civil Engineering: Sindhu-Sarasvatī cities; Material science: Knowledge and use of various materials in āyurveda, rasaśāstra and vāstuvidyā; Ancient Text and Town Planning; Socio-Cultural Expression in Spatial Planning (Varna Vinyas); Principles of Town Planning (Sthan Vinyas); Ancient Towns and present planning practices.

Field visits:

- Documentation of sustainable lifestyle of rural-indigenous habitation.
- Visit/demonstration of the past sustainable construction sites.
- Visit/demonstration of water conservation sites (Baolis, check dams and wells).
- Visit/demonstration to sacred grove and enlist conservation efficiency.
- Visit/demonstration of water conservation heritage of Bundelkhand through satellite images.
- Visit/demonstration of solid waste management practices of rural-indigenous ecosystem.
- Designing of rural-indigenous sustainable storage system for food and grains.

- Cultural activities.

Books:

- Debiprasad Chattopadhyaya, Science and Society in Ancient India. K P Bagchi & Company, 2014.
- Christopher K. Chapple, 'Towards an indigenous Indian environmentalism', in Nelson E., Lance, (ed.), Purifying the Earthly Body of God, p. 20, State University of New York Press, Albany, 1998
- Science and Technology in Ancient Indian Texts, Bal Ram Singh, D.K. Print World Ltd, 2012.
- O.P. Dwivedi, Environmental Crisis and Hindu Religion, Gitanjali Publishing House, Delhi, 1987
- Rajasekaran, B. (1993). A framework for incorporating indigenous knowledge systems into agricultural research and extension organizations for sustainable agricultural development in India. Iowa State University.
- David L. Gosling, Religion and Ecology in India and Southeast Asia, Routledge, London & New York, 2001
- Environmental Consciousness and Sustainable Development in the Indian Knowledge System. Dr Vedprakash Bokar, R. Narayan and J. Kumar, Ecology and Religion: Ecological Concepts in Hinduism, Buddhism, Jainism, Islam, Christianity and Sikhism, Deep and Deep Publications, New Delhi, 2003
- Vipul Singh, The Human Footprint On Environment: Issues in India, Macmillan India, New Delhi, 2012
- Mahadevan, B., & BHAT, V. R. (2022). Introduction to Indian knowledge system: concepts and applications.
- Valiathan M.S. (2015). "The Legacy of Charaka", University Press (India) Private Limited, Hyderabad. ISBN: 978 81 7371 667 6
- Valiathan M.S. (2015). "The Legacy of Susruta", University Press (India) Private Limited, Hyderabad.
- Valiathan M.S. (2015). "The Legacy of Vagbhata", University Press (India) Private Limited, Hyderabad.
- Wujastyk Dominik (2001). "The Roots of Ayurveda", Penguin classics, Haryana, India. ISBN: 9780140436808.