

Uka Tarsadia University



B. Tech.
Semester VI

SCIENCE IN INDIAN KNOWLEDGE SYSTEM
UE5001

EFFECTIVE FROM June-2023

Syllabus version: 1.00

Subject Code	Subject Title	Teaching Scheme			
		Hours		Credits	
		Theory	Practical	Theory	Practical
UE5001	Science in Indian Knowledge System	2	0	2	0

Subject Code	Subject Title	Theory Examination Marks		Practical Examination Marks	Total Marks
		Internal	External	CIE	
UE5001	Science in Indian Knowledge System	0	0	50	50

Objectives of the course:

- To preserve and showcase the depth and breadth of Indian knowledge for sustainable society and future generation, and foster a deeper understanding of India's intellectual and cultural heritage.

Course outcomes:

Upon completion of the course, the student shall be able to,

CO1: Understand the significance of Indian knowledge system and unfold the overall Vedic corpus.

CO2: Understand and apply number system and wisdom of ancient Indian literature.

CO3: Understand and apply Vedic mathematical foundation.

CO4: Foster the Indian knowledge framework.

CO5: Understand and apply linguistic science of India and astronomy.

CO6: Understand and adopt the Ayurved for healthy lifestyle.

Sr. No.	Topics	Hours
Unit – I		
1	Indian Knowledge System – An Introduction: What is IKS? Why do we need IKS? Organization of IKS, Historicity of IKS, Some salient aspects of IKS. The Vedic Corpus: Introduction to Vedas, A synopsis of the four Vedas, Sub-classification of Vedas, Messages in Vedas, Introduction to Vedāṅgas, Prologue on Śikṣā and Vyākaraṇa, Basics of Nirukta and	6

	Chandas, Introduction to Kalpa and Jyotiṣa, Vedic Life: A Distinctive Features.	
Unit – II		
2	<p>Wisdom through the Ages: Gateways of ancestral wisdoms, Introduction to Purāṇa, The Purāṇic repository, Issues of interest in Purāṇas, Introduction to Itihāsas, Key messages in Itihāsas, Wisdom through Nīti-śāstras, Wisdom through Subhāṣita.</p> <p>Number Systems and Units of Measurement: Number systems in India – Historical evidence, Salient aspects of Indian Mathematics, Bhūta-Saṃkhyā system, Kaṭapayādi system, Measurements for time, distance, and weight, Piṅgala and the Binary system.</p>	6
Unit – III		
3	<p>Mathematics: Introduction to Indian Mathematics, Unique aspects of Indian Mathematics, Indian Mathematicians and their Contributions, Algebra, Geometry, Trigonometry, Binary mathematics and combinatorial problems in Chandaḥ Śāstra, Magic squares in India.</p>	3
Unit – IV		
4	<p>Knowledge Framework and classifications: Indian scheme of knowledge, The knowledge triangle, Prameya – A vaiśeṣikan approach to physical reality, Dravyas – the constituents of the physical reality, Attributes – the properties of substances and Action – the driver of conjunction and disjunction, Sāmānya, viśeṣa, samavāya, Pramāṇa – the means of valid knowledge, Saṃśaya – ambiguities in existing knowledge, Framework for establishing valid knowledge, Deductive or inductive logic framework, Potential fallacies in the reasoning process, Siddhānta: established tenets in a field of study</p>	6
Unit – V		
5	<p>Astronomy: Introduction to Indian astronomy, Indian contributions in astronomy, The celestial coordinate system, Elements of the Indian calendar, Notion of years and months, Pañcāṅga – The Indian calendar system, Astronomical Instruments (Yantras), Jantar Mantar of Rājā Jai Singh Sawai.</p> <p>Linguistics: Introduction to Linguistics, Aṣṭādhyāyī, Phonetics, Word generation, Computational aspects, Mnemonics, Recursive operations, Rule based operations, Sentence formation, Verbs and</p>	6

	prefixes, Role of Sanskrit in natural language processing.	
Unit – VI		
6	Health Wellness and Psychology: Introduction to health, Āyurveda: approach to health, Sapta-dhātavaḥ: seven-tissues, Role of agni in health, Tri-doṣas, Āyurveda: definition of health, Psychological aspects of health, Disease management elements, Dinacaryā: daily regimen for health & wellness, Importance of sleep, Food intake methods and drugs, Approach to lead a healthy life, Indian approach to psychology, The tri guṇa system & holistic picture of the individual, The Nature of Consciousness, Consciousness studies and issues	3

References:

1. Mahadevan, B., Bhat Vinayak Rajat, Nagendra Pavana R.N. (2022), "Introduction to Indian Knowledge System: Concepts and Applications", PHI Learning Private Ltd. Delhi.
2. Pride of India: A Glimpse into India's Scientific Heritage, Samskrita Bharati, New Delhi.
3. Sampad and Vijay (2011). "The Wonder that is Sanskrit", Sri Aurobindo Society, Puducherry.
4. Acarya, P.K. (1996). Indian Architecture, Munshiram Manoharlal Publishers, New Delhi.
5. Banerjee, P. (1916). Public Administration in Ancient India, Macmillan, London.
6. Kapoor Kapil, Singh Avadhesh (2021). "Indian Knowledge Systems Vol – I & II", Indian Institute of Advanced Study, Shimla, H.P.

Course objectives and Course outcomes mapping:

- To preserve and showcase the depth and breadth of Indian knowledge for sustainable society and future generation, and foster a deeper understanding of India's intellectual and cultural heritage: CO1, CO2, Co3, Co4, Co5, and CO6.

Course units and Course outcomes mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Indian Knowledge System – An Introduction and The Vedic Corpus	✓					
2	Wisdom through the Ages and Number Systems and Units of Measurement		✓				

3	Mathematics			✓			
4	Knowledge Framework and classifications				✓		
5	Astronomy and Linguistics					✓	
6	Health Wellness and Psychology						✓

Programme outcomes:

- PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.
- PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.
- PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.
- PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.
- PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.
- PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.
- PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.
- PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.
- PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.
- PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO 12: Life-long learning: recognition of the need for, and an ability to engage in life-long learning.

Programme outcomes and Course outcomes mapping:

Programme Outcomes	Course Outcomes					
	C01	C02	C03	C04	C05	C06
P01			✓		✓	
P02			✓			
P03						
P04						
P05						
P06						
P07						
P08	✓					
P09						
P010						
P011						
P012			✓		✓	✓