

Subject Code: <b>HSS-</b>	Course Title: <b>Indian Knowledge System</b>	Total Contact Hours: <b>Self-paced</b>	<b>L:</b>	<b>T: 0</b>	<b>P: 0</b>	<b>C:</b>
Pre-requisite: <b>None</b>		Year: <b>2023-24</b>	Semester: <b>Odd</b>			
Type of Course: <b>Compulsory</b>						

\*\* L ☐ Lectures, T ☐ Tutorials, P ☐ Practical C ☐ Credit

### Learning Objective:

This course aims to offer a brief but comprehensive understanding of the basics of engineering from the Indian perspectives. The course covers the fundamentals of Vedas, the uniqueness of Vedic life, and the relevance of Vedic knowledge in engineering. It brings into the foreground the details of Indian Mathematics and Indian astronomy to highlight the significance of the scientific attitudes that have been there in ancient Indian culture. In addition, it includes historical information on the notions of engineering and technology in old times that would provide interesting ideas to students to acquaint themselves with the indigenous concepts of science and technology.

### Course outcomes (COs):

On completion of this course, the students will have the ability to:		Bloom's Level
CO-1	<b>Recognize</b> theories and equations of knowledge that have been prevalent in ancient India.	<b>1</b>
CO-2	<b>Understand</b> the long civilizational history through Vedas and cultural artifacts.	<b>2</b>
CO-3	<b>Understand</b> the contributions of Indian mathematicians	<b>2</b>
CO-4	<b>Discover</b> the basic aspects of Indian astronomy and its relevance to contemporary scientific fields.	<b>3</b>
CO-5	<b>Discover</b> and <b>relate</b> to the techniques of engineering of ancient India.	<b>3</b>

Course Topics	Lecture Hours and CO Mapping	
<b>UNIT - I Indian Knowledge System - An Introduction:</b>	<b>6</b>	<b>CO1</b>
1.1. What is IKS? 1.2. Why do we need IKS? 1.3. Organization of IKS 1.4. Historicity of IKS 1.5. Some salient aspects of IKS		

<b>UNIT – II The Vedic Corpus</b>	<b>8</b>	<b>CO2</b>
2.1 Introduction to Vedas 2.2 A Synopsis of the four Vedas 2.3 Sub-classification of Vedas 2.4 Messages in Vedas 2.5 Introduction to Vedāṅgas 2.6 Prologue on Śikṣā and Vyākaraṇa 2.7 Basics of Nirukta and Chandas 2.8 Introduction to Kalpa and Jyotiṣa 2.9 Vedic Life: A Distinctive Feature		
<b>UNIT – III Mathematics</b>	<b>8</b>	<b>CO3</b>
3.1. Introduction to Indian Mathematics 3.2. Unique Aspects of Indian Mathematics 3.3. Indian Mathematicians and their Contributions 3.4. Algebra 3.5 Geometry 3.6. Trigonometry 3.7. Binary mathematics and combinatorial problems in Chandaḥ Śāstra 3. 8. Magic squares in India		
<b>UNIT-IV Astronomy</b>	<b>8</b>	<b>CO4</b>
4.1. Introduction to Indian astronomy 4.2. Indian contributions in astronomy 4.3. The celestial coordinate system 4.4. Elements of the Indian calendar 4.5. Notion of years and months 4.6. Pañcāṅga – The Indian calendar system 4.7. Astronomical Instruments (Yantras) 4.8. Jantar Mantar of Rājā Jai Singh Sawai		
<b>UNIT-V Engineering and Technology: Metals and Metalworking</b>	<b>10</b>	<b>CO5</b>
5.1. Wootz Steel: The rise and fall of a great Indian technology 5.2. The Indian S & T heritage		

- 5.3. Mining and ore extraction
- 5.4. Metals and metalworking technology
- 5.5 Iron and steel in India
- 5.6. Lost wax casting of idols and artefacts
- 5.7. Apparatuses used for extraction of metallic components

**Study Material:** Indian Knowledge System(IKS): Concepts and Applications in Engineering (Swayam Course): <https://onlinecourses.swayam2.ac.in/imb23 mg53/preview>

**Evaluation Model**

Component	Weightage	COs
End Term	100	1,2,3

**CO and PO Correlation Matrix for B.Tech. for all disciplines**

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1								1				1			
CO 2							1								
CO 3			2												
CO 4			2												
CO 5							1								

**Prepared on:** 17 July 2022

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