B.Tech. 6th Semester

	National Institute of Technology Meghalaya An Institute of National Importance		CURRICULUM

Programme	Bachelor of Technology			Year of Implementation			2024-25
Department	Humanities and Social Sciences			Semester			VI

Course Code	Course Name		Prerequisite	Credit Structure				Marks Distribution			
				L	T	P	C	INT	MID	END	Total
				2	0	0	2	50	50	100	200

HS302	Indian Culture and Civilization	Nil	COs	Statement	Bloom's Taxonomy

Course Objectives	To introduce the fundamentals of Ancient Indian Science to understand the Indian systems of Mathematics, Physics, Chemistry, Metallurgy and Town Planning	Course Outcomes	HS302.1	Explain the concepts of Indian knowledge system and Indian culture and civilization.	Understand
	To help students to trace, identify, and develop knowledge in ancient knowledge systems		HS302.2	Explain the Fundamentals of Ancient Indian Science	Understand
	To help to understand the rational, verifiable and universal solution from the ancient Indian knowledge system		HS302.3	Explain the Fundamentals of Ancient Indian Mathematics and Computation	Understand
	To build in the learners a deep-rooted pride in Indian knowledge, committed to sustainable development		HS302.4	Explain the Fundamentals of Ancient Indian Metallurgy and Architecture	Understand
			HS302.5	Explain the Fundamentals of Ancient Indian Philosophy, Literature, Culture, History and Governance	Understand

COs	Mapping with Program Outcomes (POs)												Mapping with PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
HS302.1	3	2	1	1	1	3	2	1	1	2	1	3			
HS302.2	3	2	1	1	1	3	2	1	1	2	1	3			
HS302.3	3	2	1	1	1	3	2	1	1	2	1	3			
HS302.4	3	2	1	1	1	3	2	1	1	2	1	3			
HS302.5	3	2	1	1	1	33	2	1	1	2	1	3			
HS302	3.0	2.0	1.0	1.0	1.0	3.0	2.0	1.0	1.0	2.0	1.0	3.0			

SYLLABUS

No.	Content	Hours	COs
I	**Introduction**: Introduction to Indian Knowledge System (IKS); Importance of Ancient Knowledge; Unique aspects of Indian Knowledge System; Wisdom through the ages; Indian Philosophers; Indian culture and Civilization; Ancient Indian Science and Technology	05	HS302.1
II	**Sciences**: **Physics**: Astronomy; Positional Astronomy, Mahayuga & Kalpa system, Yuga system, Ayanas, Months, tithis and seasons, Time units, sun and moon's motion, Planet position, Ayanachalana, Zero-precision year, Katapayaadi system, Indian nakshatra system **Chemistry**: Chemistry in India; Vatsyayana, Nagarjuna, Khanda, Al-Biruni, Vagbhata—Building of the Ras-shala (laboratory), Working arrangements of Ras-shala, Material and equipment, Yasodhara Bhatta—Process of distillation, Apparatus, Saranasamskara, Saranataila	06	HS302.2
III	**Mathematics and Computation**: **Mathematics**: Mathematics in India: Baudhayana's Sulbasutras, Aryabhata, Bhaskaracharya-I, Severas Sebokht, Syria, Brahmagupta, Bhaskaracharya-II, Jyesthadeva, Vedic Mathematics **Computer Science**: Brahamgupta (vargaprakrati, bhramasphuta siddhanta, bhavana), Ayatavftta, Ganitasarasamgraha, Lilavathi, Ganesadaivajna, Randavantika, Suryasidhhanta, Grahalaghava, Sadratnamala, Mandavrtta, Sighrartta, Bijaganita, Bakshali manuscript	06	HS302.3
IV	**Engineering**: **Mechanical**: Metals and Metallurgy in India: Survarna (gold) and its different types, prosperities, Rajata (silver), Tamra (copper), Loha (iron), Vanga (tin), Naga /sisa (lead), Pittala (brass), Manufacturing process and ship building **Civil**: Architecture in India: Nagara (northern style), Vesara (mixed style), and Dravida (southern style), Indian vernacular architecture, Temple style, Cave architecture, Rock cut architecture, Kalinga architecture, Chandels architecture, Rajput architecture, Jain architecture, Sikh architecture, Maratha architecture, Indo-Islamic architectural, Indo-Saracenic revival architecture, Greco-Buddhist style	06	HS302.4
V	**Humanities and Social Sciences**: Ancient Indian Philosophy; Basic history of India, Literature and the Epics; Ancient Indian culture and civilization; Health, Wellness & Psychology; Yoga way of life; Governance, Public Administration & Management reference to Ramayana, Artha Sastra, Kauṭilyan State; History and culture of the Northeast; Indigenous system of forest management in Meghalaya	05	HS302.5
	Total Hours	28	

Essential Readings

1. B Mahadevan, V. R. Bhat, N. Pavana R. N., *Introduction to IKS: Concepts and Applications*, PHI, 2023.

2. Kapur K. and A. K. Singh, *Indian Knowledge Systems, Vol. I.* Indian Institute of Advanced Study, Shimla, 2005.

Supplementary Readings

1. Sharma, A. K., *History of Science in India (Set)*, The Ramakrishna Mission Institute of Culture, 2012.

2. Nair, Shantha N., *Echoes of Ancient Indian Wisdom,* Hindology Books, 2008.