	National Institute of Technology Meghalaya An Institute of National Importance		CURRICULUM

Programme	**Bachelor of Technology**					Year of Regulation			**2024**
Department	**Humanities and Social Sciences**					Semester			**VI**

Course Code	Course Name	Pre-requisite	Credit Structure				Marks Distribution			
			L	T	P	C	INT	MID	END	Total
HS 394	**Indian Culture and Civilization**	**Nil**	2	0	0	2	50	50	100	200

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**	CO1	Able to understand the fundamentals of Ancient Indian Science to understand the Indian systems of Mathematics, Physics, Chemistry, Metallurgy and Town Planning
	To help students to trace, identify, and develop knowledge in ancient knowledge systems		CO2	Able to trace, identify, and develop knowledge in ancient knowledge systems
	To help to understand the apparently rational, verifiable and universal solution from the ancient Indian knowledge system for the holistic development of the students		CO3	Able to understand the apparently rational, verifiable and universal solution from the ancient Indian knowledge system for the holistic development of the students
	To build in the learners a deep-rooted pride in Indian knowledge, committed to sustainable development		CO4	Able to develop in the students a deep-rooted pride in Indian knowledge, committed to sustainable development

No.	COs	Mapping with Program Outcomes (POs)											
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO1	3	2	1	1	1	3	2	1	1	2	1	3
2	CO2	3	2	1	1	1	3	2	1	1	2	1	3
3	CO3	3	2	1	1	1	3	2	1	1	2	1	3
4	CO4	3	2	1	1	1	3	2	1	1	2	1	3

SYLLABUS			
No.	Content	Hours	COs
I	**Introduction**: Introduction to Indian Knowledge System, Introduction to the Science and the way of doing science and research in India, Ancient Science in Intra & Inter Culture Dialogue & Coevolution.	02	All COs
II	**Sciences**: Physics: Astronomy, Positional Astronomy (sun, planets, moon, coordinate systems, precision of the equinox and its effects, eclipses, comets and meteors), 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.	03+03	All COs
III	**Mathematics and Computation**: Mathematics: Mathematics in India: Baudhayana's Sulbasutras, Aryabhata, Bhaskaracharya-l, Severas Sebokht, Syria, Brahmagupta, Bhaskaracharya-ll, Jyesthadeva. Computer Science: Brahamgupta (vargaprakrati, bhramasphuta siddhanta, bhavana), Ayatavftta, Ganitasarasamgraha, Lilavathi, Ganesadaivajna, Randavantika, Suryasidhhanta, Grahalaghava, Sadratnamala, Mandavrtta, Sighrartta, Bijaganita, Bakshali manuscript. Electronics: Vedic Mathematics.	03+02+02	All COs
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.	03+03	All COs
V	**Humanities and Social Sciences**: Governance, Public Administration & Management with reference to Ramayana, Artha Sastra, and the Kautilyan State, Introduction to Indian Philosophy, Indigenous system of Forest Management in Meghalaya.	03	All COs
	Total Hours	24	

Essential Readings

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

2. Kapur K. and Singh A. K. (Eds) *Indian Knowledge Systems*, Vol. l. Indian Institute of Advanced Study, Shimla, 2005

Supplementary Readings

1. Sharma, A. K. (Ed), *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