

IKS (2)

Name of the Course: Physics Major Course 9
MJ – 9: IKS: Physics in Vedic Science and Indian Scientists (2 Credits)

Sr. No.	Heading	Particulars
1	Description the course (Including but Not limited to)	: Introduction, relevance, Usefulness, Application, interest, connection with other courses, demand in the industry, job prospects etc.
2	Vertical	: Major/Minor/Open Electives /Skill Enhancement / Ability Enhancement/Indian Knowledge System
3	Type	: Theory
4	Credits	: 2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	Hours Allotted	: 30 Hours
6	Marks Allotted	: 50 Marks
7	Course Objectives (CO): The students are expected to	
	CO 1.	know the fundamental concepts of physics as developed in ancient Indian Knowledge Systems
	CO 2.	create awareness about the scientific contributions of Indian scholars from ancient to modern times.
	CO 3.	enable students to understand the historical evolution of physical concepts such as matter, motion, gravitation, sound, electricity, astronomy, aeronautics, and marine science.
	CO 4.	develop critical and comparative thinking by relating ancient Indian scientific ideas with modern physics principles.
	CO 5.	promote interdisciplinary learning by connecting physics with philosophy, history, culture, and technology.
	CO 6.	foster scientific temper, cultural appreciation, and ethical understanding of knowledge traditions.
8	Course Outcomes (OC): After completing the course, the students will be able to	
	OC 1.	recall and describe the key concepts of physics present in Vedic and classical Indian texts.
	OC 2.	explain the contributions of ancient Indian scholars such as Rishi Kanad, Aryabhata, and Bhaskaracharya to the development of physical sciences.
	OC 3.	analyze ancient theories of motion, gravitation, sound, and atomic concepts in comparison with modern physics principles.
	OC 4.	demonstrate an understanding of ancient Indian knowledge related to aeronautics, marine science, astronomy, and materials.
	OC 5.	evaluate the relevance of Indian Knowledge Systems in the contemporary scientific and technological context.
	OC 6.	communicate scientific ideas and historical insights effectively through presentations, projects, and written assignments.
9	Modules / Units: There will be one Module / Unit Per Credit	
	Module 1 / Unit I: Physics in Vedic Science 15 Hours	
	Physics in Vedas, Rishi Kanad, The concept of anu, Five types of motions, Comparison between laws of motion mentioned in sutras of Rishi Kanad and Sir Isaac Newton, theory of gravitation, distance and time units, History of Electricity: From Ancient Times to the Modern Times, Sound and acoustics in Vedic science.	
	Module II / Unit II: Ancient Aeronautics and Marine science and Introduction to Indian Physicists 15 Hours	

	Aeronautics, Definition of a plane, Airway, the mechanisms in a plane, energy sources needed to fly an aeroplane, Types of aircrafts, Metals described in the Vimana Shastra, Marine science, Ancient Astronomy.		
	Indian scientists: Bhaskaracharya, Aryabhatta, Sir C. V. Raman, Satyendra Nath Bose, Homi Jahangir Bhabha, Subrahmanyam Chandrasekhar, Vikram Ambalal Sarabhai, Meghnad Saha		
10	Reference Books: 1. Vedic Physics, Keshav Dev Verma, Motilal Banarsidass Publishers, New Delhi 2. Bhaskaracharya - Gunakar Mule - Gyan Vigyan Prakashan, New Delhi 3. Arya Bhatta - Gunakar Mule - Gyan Vigyan Prakashan, New Delhi 4. Vaimanika Shastra Rediscovered - A Project Study—Wg. Cdr. M. P. Rao (Retd), Bangalore. 5. Modern Physics and Vedanta—Swami Jitatmananda—Bharatiya Vidya Bhawan. 6. Cosmos—Carl Sagan, Ballantine Books—New York		
11	Internal Continuous Assessment: 40% (20 Marks)	External Assessment, (60%) (30 Marks)	
12	Continuous Evaluation through: Test/ Individual/Group Project and Presentation/ Participation in Lectures and Seminars, Webinars/Book review/ Symposium/ Panel Discussion / Field Visit/ Report Writing.		Evaluation: through Exam at the End of the Semester / Term.
13	Format of Question Paper for Semester End Examination Total Marks: 30 Marks Duration: One Hour		
	Module I / Unit I 15 Marks	Q.1 A) Attempt any Two (Each carry -5 Marks) i) Theory ii) Theory iii) Theory iv) Theory	10 Marks
		Q.1 B) Attempt any one (Each carry -5 Marks) i) Problem /Theory ii) Problem /Theory	05 Marks
	Module II / Unit II 15 Marks	Q.2 A) Attempt any Two (Each carry -5 Marks) i) Theory ii) Theory iii) Theory iv) Theory	10 Marks
		Q.2 B) Attempt any one (Each carry -5 Marks) i) Problem /Theory ii) Problem /Theory	05 Marks