

AC – 20/04/2024
Item No. – 6.6 Sem. I (5a)

As Per NEP 2020

University of Mumbai



Syllabus for Basket of OE	
Board of Studies in Physics	
UG First Year Programme	
Semester	I
Title of Paper: Wonders of Physics – I	Credits 2
I)	
II)	
III)	
From the Academic Year	2024-25

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 :	Open Elective (Choose By \surd)
3	Type :	Theory
4	Credit:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a semester)
5	Hours Allotted :	30 Hours / 60 Hours
6	Marks Allotted:	50 Marks /100 Marks
7	Course Objectives: (List some of the course objectives) After successful completion of this course students will be able to: <ol style="list-style-type: none"> 1. Understand the historical development of science, fundamental physics concepts. 2. Recognize the significance of physics in understanding reality. Familiarize with cosmological models and tools. Grasp the big bang model and fine-tuned universe. 3. Recognize cause-and-effect principles in cosmology. 	
8	Course Outcomes: (List some of the course outcomes) At the end of this course, student will able to, <ol style="list-style-type: none"> 1. Understand Aristotle's Criticism of Plato and Early Ontology, Aristotle's Philosophy of Nature (Physics) 2. Understand Metaphysics as "First Philosophy", Ancient Texts and Terminology, major Milestones in the History of Cosmology 3. Explain the Big Bang Theory and Its Significance, Fine-Tuning of Physical Constants for Life, Recent Discoveries Related to the Solar System and Cosmological Distances. Understand the Life Cycle of Massive Stars, Including Supernovae and Black Holes 	

9	Modules: - Per credit One module can be created	
	Module 1: Unit-I: Science	(15 Lectures)
	Introduction, Aristotelian science, Science - tracing back its origin, what is physics, why physics, the three fundamental entities of reality –Space, time and matter.	
	Module 2: Unit-II: Space	(15 Lectures)
	<p>1. Universe by design: From backyard to the big bang – A brief history of cosmology; world-views in science and cosmological models, twentieth century cosmology, more recent developments in cosmology, tools for explaining the universe, the big bang model, fine-tuned universe, the law of cause and effect, A pale blue dot but a privileged planet.</p> <p>2. Frontiers of Astronomy: From dawn to dusk, exploring the night sky, recent discoveries in the solar system, other worlds, cosmological distance and measurements, death of massive stars – supernova and black holes</p>	
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11	Reference Books: 1. Aslamazov, L. G., Varlamov, A. (2001). The Wonders of Physics. Singapore: World Scientific Publishing Company. 2. Hoyle, F. (1955). Frontiers of Astronomy. United Kingdom: Harper. 3. Concepts of Matter in Science Education. (2013). Netherlands: Springer Netherlands.	
12	Internal Continuous Assessment: 40%	External, Semester End Examination: 60% Individual Passing in Internal and External Examination
13	Continuous Evaluation through: Quizzes, Class Tests, presentation, project, role play, creative writing, assignment etc.(at least 3)	
14	Format of Question Paper: for the final examination For OE: External – 30 Marks (2 Credits) Internal – 20 Marks Question Paper Format for 30 Marks Duration: One Hour	

Attempt any Two Questions out of Four from the following.	
1) Answer the following questions	(15 Marks)
i) Theory (Unit-I)	(8 Marks)
ii) Theory (Unit-II)	(7 Marks)
2) Answer the following questions	(15 Marks)
i) Theory (Unit-I)	(8 Marks)
ii) Theory (Unit-II)	(7 Marks)
3) Answer the following questions	(15 Marks)
i) Theory (Unit-I)	(8 Marks)
ii) Theory (Unit-II)	(7 Marks)
4) Answer the following questions	(15 Marks)
i) Theory (Unit-I)	(8 Marks)
ii) Theory (Unit-II)	(7 Marks)

**Sign of the BOS
Chairman
Dr. T.N. Ghorude
Board of Studies in
Physics**

**Sign of the
Offg. Associate Dean
Dr. Madhav R. Rajwade
Faculty of Science &
Technology**

**Sign of the
Offg. Dean
Prof. Shivram S. Garje
Faculty of Science &
Technology**