Semester: 2	Course No.: 124 (T)	Course Code: : PHMDC 124(T) Course Title: : Sound , Ultrasonic and Indian Astronomy
Credits: 2		Course Category: Multidisciplinary

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO111 T-1	REMEMBERING	Overview of some basic theories related to sound , ultra sonic and Indian
		astronomy
CO111 T-2	UNDERSTANDING	Understanding in fundamentals in sound , ultra sonic and Indian astronomy will
		be developed .
CO111 T-3	APPLYING	Ability to apply concepts of physics in science engineering and technology will
		be developed that will strengthen student's analytical abilities .
CO111 T-4	ANALYSING	
CO101.5	EVALUATING	

Unit No.	Unit Contents	Sessions Allotted
1	Sound waves and Ultrasonic Introduction, Intensity & intensity level, Loudness & pitch radiation from a piston, diffraction, radiation efficiency of a sound source. Magnetostriction method, Piezo-electric oscillator, Piezo-electric detectors, Measurement of velocity of ultrasonic waves, diffraction effect & its application to determine the velocity of the waves, the ultrasonic waves & its use. Architectural Acoustics, Sabine's formula, Reverberation time-theoretical treatment, Reverberation time of a live room, Reverberation time of a dead room, optimum reverberation time.	15
2	Indian Astronomy Historical Introduction : Introduction, Ancient Indian Astronomy, The Vedic Period and Vedangajyotisa, Siddhanta, Aryabhata I, Astronomers after Aryabhata, Contents of the Siddhantas, Continuity in Astronomical Tradition. Celestial Sphere Introduction, Diurnal Motion of Celestial Bodies, Motion of Celestial Bodies Relative to Stars, Celestial Horizon, Meridian, Polar Star and Directions, Zodiac and Constellations, Equator and Poles, Latitude of a place and Altitude of Polar Star, Ecliptic and the Equinoxes. Co-ordinate Systems Introduction, Ecliptic System, Equatorial System, Horizontal System, Meridian System, Phenomenon of Precession of Equinoxes, Ancient Indian References to the Precession, Effects of Precession on Celestial Longitude, Tropical and Sidereal Longitudes. Rasi and Naksatra Systems .	15

Suggested text Books:

- 1. A textbook on oscillations, waves & acoustics by M. Ghosh, D. Bhattacharya, Chpter 23, articles 23.1 to 23.7, Chapter 24, articles 24.1 to 24.6, 3rd edition, 2006, S. Chand and Company Ltd.
- Indian astronomy: An introduction , S. Balachandra Rao,.
 Chapter 1 , articles: 1.1 to 1.8, Chapter 2 ,articles : 2.1 to 2.9, Chapter 3 , articles , 3.1 to 3.9, Chapter 4 , article 4.1. Distributed by Orient Longman Ltd, 1st edition, 2000.

Reference Books:

- 1. The Story of Astronomy in India by Chander Mohan, 2015.
- 2. Indian Astronomy a source book by B.V Subbaray Appa and K. V. Sharma , Nehru centre Bombay, 1985.

Semester: 2	Course No.: 124 (P)	Course Code: PHMDC 124(P) Course Title: : Physics lab
Credits: 2		Course Category: Multidisciplinary

Course Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO111 T-1	REMEMBERING	Get acquainted and learn the use of different laboratory instruments
CO111 T-2	UNDERSTANDING	Understanding of the principals involved in Astronomy, general physics, optics and electronics will become clear .
CO111 T-3	APPLYING	Using calculations and experimentally measured data different physical quantities related to general physics and electronics will be obtained and Astronomical Charts will be prepared.
CO111 T-4	ANALYSING	
CO101.5	EVALUATING	

Unit No.	Unit Contents	Sessions Allotted
1	GROUP: A 1. (a)Draw the diagram of Zodiac and Rasis (b) Nakshtras and their range of Nirayan longitudes (Ch-4 Rasi and Naksatra Systems, Indian astronomy: An introduction, S. Balachandra Rao,. Distributed by Orient Longman Ltd, 1 st edition, 2000.) 2. Least Square Method 3. Study of mass-spring system and find the force constant k 4. Flywheel-To find the moment of inertia 5. Study of probability distribution for two option system (coins) 6. Vibration magnetometer Compare the magnetic moments of two bar magnets.	30
2	GROUP: B 1. Full-wave Rectifier Obtain load characteristic and % regulation of Full-wave rectifier without filter and with capacitor filter. Determine ripple factor also. 2. Bridge Rectifier Obtain load characteristic and regulation for Bridge rectifier without using filter circuit and by using capacitor filter circuit. Obtain ripple factor without filter circuit. 3. Voltage Doubler 4. I-V Diode characteristics of a PN-junction diode and its load line analysis. 5. Parallel Resonance	30

	1
To determine the frequency of a.c. emf by series resonance circuit by varying capacitor.	
6. Universal Logic Gates NAND, NOR (Using discrete components)	
Verification of truth tables and giving understanding of voltage level for '0'and	
ʻ1'level.	

Reference books:

1. B. Sc. Practical Physics by C. L. Arora , 20^{th} Edition , 2020 S. Chand and

Company

- 2. Practical Physics by G. L. Squires. 4th edition , Cambridge , 2001.
- 3. Practical Physics with viva voce Dr.S.L. Gupta and Dr.V.Kumar , 27th edition , 20210 Pragati Prakashan