HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B. Sc. PHYSICS - SEMESTER – IV

TYPE OF COURSE: SKILL ENHANCEMENT COURSE (SEC)

PROGRAMME CODE: SCIUG101 COURSE CODE:SC23SECPHY406

COURSE NAME: ASTRO / SPACE PHYSICS

(Effective from June 2024 Under NEP – 2020)

Total Credits: 02 Teaching Hours per Week: 02 Teaching Hours per Semester: 30	THEORY SEC I	External Marks – 25 Internal Marks - 25

Course Objectives:

1. To provide a comprehensive understanding of the sun as a star and its structure.
2. To learn about sun's outer layers and solar activity.
3. To know use of instrument like Spectroheliograph and common features of sun.

Course outcome:

After the successful completion of the course students will be able to

1. Develop a understanding of description of sun and its structure.
2. Understand about sun's different outer layers and sunspot.
3. Gain knowledge about common features of sun.

:: Syllabus ::

Unit No.	Content	Credit	Hrs 30
Unit-1	**Sun and Solar Radiation:** Introduction, Astronomical background, General description of the sun, Solar structure, Sun's outer layers, Composition, Visible features on the sun, More about sun's outer atmosphere, Temperature of the corona, Solar activity and Sunspot cycles.	1	15
Unit-2	**Cosmic rays and High energy astrophysics:** An introduction to cosmic rays and high energy astrophysics: primary cosmic radiation, energy spectrum of primary cosmic rays, secondary cosmic rays, effect of geomagnetic field on cosmic rays, time variation of cosmic rays, photons in primary cosmic rays, origin of cosmic rays, basic facts about cosmic rays, region of confinement	1	15
Reference: *An Introductory Course on Space Science and Earth's Environment by S.S.Degaonker (Gujarat University Publication, Ahmedabad)*			

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

B. Sc. PHYSICS - SEMESTER – IV

TYPE OF COURSE: SKILL ENHANCEMENT COURSE (SEC)

PROGRAMME CODE: SCIUG101 COURSE CODE:SC23SECPHY406A

COURSE NAME: TRANSDUCER AND SOUND

(Effective from June 2024 Under NEP – 2020)

Total Credits: 02 Teaching Hours per Week: 02 Teaching Hours per Semester: 30	THEORY SEC II	External Marks – 25 Internal Marks - 25

Course Objectives:

- To understand the principles of Transducers and Sabine's empirical formula
- Learns about various types of Microphones
- To develop foundation in acoustics.
- To Learn To understand the measurement time of reverberation

Course outcome:

After the successful completion of the course students will be able to

- Understand the principles of Transducers.
- Learns about various types of Microphones.
- Learns the concepts acoustics Get sufficient knowledge of Sabine's empirical formula.
- Understand and can the measurement time of reverberation.

:: Syllabus ::

Unit No.	Content	Credit	Hrs 30
Unit-1	**Microphone and Loudspeaker:** Introduction, Carbon Microphones, Hot wire Microphones, Condenser Microphone, Moving Coil electrodynamic microphone, Crystal Microphone, Ribbon or velocity Microphone, Hydrophone, Loudspeaker. **Speech and Hearing:** Human voice, Hearing ear and its structure, Mechanism of hearing, Helmhotlz theory of audition, Thresold of hearing	1	15
Unit-2	**Architectural Acoustics:** Architectural acoustics and Sabine's empirial formula, Reverberation time of a live room, dead room, Optimum reverberation time, Measurement of time of Reverberation, Measurement of absorption co efficient, Specific acoustic impedance, power relation, Transient response of an oscillator, Filter. **Musical Sound:** Musical sound, Principle features of musical sound-Pitch, Quality or Timber, Musical Scale	1	15
Reference: *A Textbook of oscillation, waves and Acoustics by Dr M Ghosh & Dr D Bhattachaarya S. Chand 5th edition*			