COURSE DESCRIPTORS

Title of the Course	**ALLIED PHYSICS – I**	**Hours/Week**	04
Course Code	AUEPH13A	**Credits**	03
Category	ELECTIVE COURSE -I	**Year & Semester**	I & I
Prerequisites	Higher secondary Physics	**Regulation**	2024

Objectives of the course:

- To impart basic principles of Physics that which would be helpful for students who have taken programmes other than Physics.

UNITS	Contents	COs	Cognitive Levels
UNIT-I	**WAVES, OSCILLATIONS AND ULTRASONICS**: Definition of simple harmonic motion (SHM) – laws of transverse vibrations of strings – determination of AC frequency using sonometer (steel and brass wires) – ultrasound – production – piezoelectric method – application of ultrasonic's: medical field – ultrasonography-NDT	CO1	K1 K2 K3
UNIT-II	**PROPERTIES OF MATTER**: Elasticity: elastic constants – bending of beam – theory of non- uniform bending – determination of Young's modulus by non-uniform bending – determination of rigidity modulus by torsional pendulum Viscosity: streamline and turbulent motion – critical velocity – coefficient of viscosity – Poiseuille's formula – comparison of viscosities – burette method, Surface tension: definition– drop weight method – surface tension and interfacial surface tension	CO2	K1 K2 K3
UNIT-III	HEAT AND THERMODYNAMICS: Joule-Kelvin effect – Joule Thomson porous plug experiment – theory – temperature of inversion –Linde's process of liquefaction of air– liquid Oxygen for medical purpose– importance of cry coolers– entropy – change of entropy in reversible and irreversible process	CO3	K1 K2 K3
UNIT-IV	ELECTRICITY AND MAGNETISM: potentiometer – principle – measurement of thermo emf using potentiometer –magnetic field due to a current carrying conductor – Biot-Savart's law – field along the axis of the coil carrying current – peak, average and RMS values of ac current and voltage	CO4	K1 K2 K3

UNIT-V	DIGITAL ELECTRONICS AND DIGITAL INDIA: Semiconductor: Pure, N and P type semiconductor, PN junction diodes, Logic gates, OR, AND, NOT, NAND, NOR , EXOR logic gates – universal building blocks – Boolean algebra – De Morgan's theorem – verification .	CO5	K1 K2 K3

Recommended Text Books

1. R.Murugesan (2001), Allied Physics ,S. Chand and Co, NewDelhi.

2. Brijlal and N.Subramanyam (1994), Waves and Oscillations, Vikas Publishing House, New Delhi

3.Brijlal and N.Subramaniam (1994), Properties of Matter, S.Chand and Co., New Delhi.

4. J.B.Rajam and C.L.Arora (1976). Heat and Thermodynamics (8th edition), S.Chand and Co., New Delhi.

5. R.Murugesan (2005), Optics and Spectroscopy, S.Chand and Co, New Delhi.

6. A.Subramaniyam, Applied Electronics 2nd Edn., National Publishing Co., Chennai.

Reference Books

1.Resnick Halliday and Walker(2018).Fundamentals of Physics(11the Edition),John Willey and Sons, Asia Pvt.Ltd., Singapore.

2. V.R.Khanna and R.S.Bedi (1998), Text book of Sound1st Edn. Kedharnaath Publish and Co, Meerut.

3. N.S.Khare and S.S.Srivastava (1983), Electricity and Magnetism10thEdn.,AtmaRam and Sons, New Delhi.

4. D.R.Khanna and H.R. Gulati(1979). Optics,S. Chand and Co.Ltd., New Delhi.

5. V.K.Metha(2004).Principlesofelectronics6thEdn. S.Chandandcompany

6. V. Vijayendran, Introduction to Integrated Electronics, Viswanathan Printers & Publisher Pvt. Ltd.

Web Resources

1.https://youtu.be/M_5KYncYNyc

2. https://youtu.be/ljJLJgIvaHY

3. https://youtu.be/7mGqd9HQ_AU

Course Learning Outcomes (for Mapping with POs and PSOs)

On completion of the course the students should be able to

COs	CO Description	Cognitive Level
CO1	Explain types of motion and extend their knowledge in the study of various dynamic motions analyze and demonstrate mathematically. Relate theory with practical applications in medical field.	K1,K2,K3
CO2	Explain their knowledge of understanding about materials and their behaviors and apply it to various situations in laboratory and real life. Connect droplet theory with Corona transmission.	K1,K2,K3
CO3	Comprehend basic concept of thermodynamics, concept of entropy and associated theorems able to interpret the process of flow temperature physics in the back ground of growth of this technology.	K1,K2,K3
CO4	Articulate the knowledge about electric current resistance, capacitance in terms of potential electric field and electric correlate the connection between electric field and magnetic field and analyze them mathematically verify circuits and apply the concepts to construct circuits and study them.	K1,K2,K3
CO5	Interpret the real life solutions using AND, OR, NOT basic logic gates and in tend their ideas to universal building blocks .	K1,K2,K3,

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3
CO1	2	3	1	3	1	1	1	-	-	1	3	2	1
CO2	3	2	1	3	1	1	1	-	-	1	3	2	1
CO3	3	2	1	3	1	1	1	-	-	1	3	2	1
CO4	3	3	1	3	1	1	1	-	-	1	3	2	1
CO5	3	2	1	3	1	1	1	-	-	1	3	2	1