COURSE	ALLIED PAPER
COURSETITLE	ALLIED PHYSICS – I
CREDITS	3
COURSE	To impart basic principles of Physics that which would be helpful
OBJECTIVES	for students who have taken programmes other than Physics.

UNITS	COURSE DETAILS						
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 ultrasonics: medical field – lithotripsy, ultrasonography.						
UNIT-II	PROPERTIES OF MATTER: <i>Elasticity</i> : elastic constants – bending of beam – theory of non- uniform bending – determination of Young's modulus by non-uniform bending – energy stored in a stretched wire – torsion of a wire – determination of rigidity modulus by torsional pendulum <i>Viscosity</i> : streamline and turbulent motion – critical velocity – coefficient of viscosity – Poiseuille's formula – comparison of viscosities – burette method, <i>Surface tension</i> : definition– drop weight method – interfacial surface tension.						
UNIT-III	HEAT AND THERMODYNAMICS: Joule-Kelvin effect – Joule- Thomson porous plug experiment – theory – temperature of inversion – liquefaction of Oxygen– Linde's process of liquefaction of air– liquid Oxygen for medical purpose– importance of cryocoolers– entropy – change of entropy in reversible and irreversible process.						
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 .						
UNIT-V	DIGITAL ELECTRONICS AND DIGITAL INDIA: logic gat OR, AND, NOT, NAND, NOR, EXOR logic gates – univer building blocks – Boolean algebra – De Morgan's theorem verification – overview of Government initiatives: softwa technological parks under MeitY, NIELIT- semiconductor laborator under Dept. of Space – an introduction to Digital India.						
PROFESSIONAL COMPONENTS	Expert lectures –seminars — webinars – industry inputs – social accountability – patriotism						
TEXT BOOKS	 R.Murugesan (2001), AlliedPhysics,S. ChandandCo,NewDelhi. BrijlalandN.Subramanyam (1994), WavesandOscillations,VikasPublishing House,NewDelhi. BrijlalandN.Subramaniam (1994), PropertiesofMatter,S.ChandandCo.,NewDelhi. J.B.Rajam and C.L.Arora (1976). Heat and Thermodynamics 						

	(8 th edition), S.ChandandCo.,New Delhi.							
	R.Murugesan(2005), OpticsandSpectroscopy,S.ChandandCo,NewDelhi.							
	A.Subramaniyam,							
	AppliedElectronics2 nd Edn.,NationalPublishingCo.,Chennai.							
	ResnickHallidayandWalker(2018).FundamentalsofPhysics(11 th e							
	dition), John Willeyand Sons, Asia Pvt. Ltd., Singapore.							
	2. V.R.KhannaandR.S.Bedi (1998), TextbookofSound1 st Edn.							
	KedharnaathPublishandCo, Meerut.							
DEFEDENCE	3. N.S.KhareandS.S.Srivastava (1983),							
REFERENCE	ElectricityandMagnetism10 th Edn.,AtmaRamandSons, New							
BUUKS	Delhi.							
	4. D.R.KhannaandH.R. Gulati(1979). Optics,S. Chand							
	andCo.Ltd.,New Delhi.							
	5. V.K.Metha(2004).Principlesofelectronics6 th Edn.							
	S.Chandandcompany.							
	1. <u>https://youtu.be/M_5KYncYNyc</u>							
	https://youtu.be/ljJLJgIvaHY							
	https://youtu.be/7mGqd9HQ_AU							
	https://youtu.be/h5jOAw57OXM							
	5. <u>https://learningtechnologyofficial.com/category/fluid-</u>							
WEB	mechanics-lab/							
RESOURCES	6. <u>http://hyperphysics.phy-</u>							
	astr.gsu.edu/hbase/permot2.htmlhttps://www.youtube.com/watc							
	<u>h?v=gT8Nth9NWPMhttps://www.youtube.com/watch?v=9mX</u>							
	OMzUruMQandt=1shttps://www.youtube.com/watch?v=m4u-							
	SuaSu1sandt=3shttps://www.biolinscientific.com/blog/what-are-							

METHOD OF EVALUATION:

Continuous InternalAssessment	End Semester Examination	Total	Grade
25	75	100	

COURSE OUTCOMES:

Attheendofthecourse, the student will be able to:

		Explain types of motion and extend their knowledge in the				
	CO1	study of variousdynamicmotionsanalyzeand demonstrate				
		mathematically. Relate theory with practical applications in				
		medical field.				
	CO2	Explaintheirknowledgeofunderstandingaboutmaterialsandtheir				
		behaviorsandapplyittovarioussituationsinlaboratoryandreal life.				
		Connect droplet theory with Corona transmission.				
		Comprehend basic concept of thermodynamics concept of				
	CO3	entropyand associated theorems able to interpret the process of				
		flowtemperaturephysicsinthebackgroundofgrowthof this				
COURSE		technology.				
OUTCOMES		Articulate the knowledge about electric current				
		resistance, capacitance in terms of potential electric field and				
	CO4	electric				
		correlatetheconnectionbetweenelectricfieldandmagneticfieldan				
		danalyzethemmathematicallyverifycircuitsandapplytheconcepts				
		toconstructcircuitsandstudythem.				
		Interpret the real life solutions using AND, OR, NOT				
		basiclogicgatesandintendtheirideastouniversalbuildingblocks.				
	CO5 InferoperationsusingBooleanalgebraandacquiree					
	sofICcircuits.Acquire information about various Govt.					
		programs/ institutions in this field.				

MAPPING WITH PROGRAM OUT COMES:

 $\label{eq:mapping} Mapcourse outcomes (\textbf{CO}) for each course with program outcomes (\textbf{PO}) in the 3-points cale of STRONG(S), MEDIUM(M) and LOW(L).$

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	М	S	S	S	Μ	S	S	S	S	М
CO3	Μ	S	S	S	S	Μ	S	S	S	S
CO4	S	S	S	S	S	S	S	М	S	S
CO5	М	S	S	S	S	S	S	S	S	S

COURSE		ODD SEMESTER - CORE					
COURSETITLE		ALLIED PRACTICAL-I					
CREDITS		3					
COURSE OBJECTIVES		Apply various physics concepts to understand Properties of Matter and waves, set up experimentation to verify theories, quantify and analyse, able to do error analysis and correlate results					
Mi	nimum of Eight	t Experiments from the list:					
1.	Young's modu	lus by non-uniform bending using pin and microscope					
2.	Young's modulus by non-uniform bending using optic lever, scale and telescope						
3.	Rigidity modulus by static torsion method.						
4.	Rigidity modul	ty modulus by torsional oscillations without mass					
2.	Surface tension	ace tension and interfacial Surface tension – drop weight method					
3.	Comparison of	parison of viscosities of two liquids – burette method					
4.	Specific heat capacity of a liquid – half time correction						
5.	. Verification of laws of transverse vibrations using sonometer						
6.	Calibration of low range voltmeter using potentiometer						
7.	. Determination of thermo emf using potentiometer						
8.	. Verification of truth tables of basic logic gates using ICs						
9.	9. Verification of De Morgan's theorems using logic gate ICs.						
10.	10. Use of NAND as universal building block (AND, OR, NOT).						
<i>Note</i> : Use of digital balance permitted							