



**AUXILIUM COLLEGE (Autonomous)**

(Accredited by NAAC with A+ Grade with a CGPA of 3.55 out of 4 in the 3<sup>rd</sup> cycle)  
Gandhi Nagar, Vellore – 6.

# **DEPARTMENT OF PHYSICS**

## **LESSON PLAN**

### **2021-2022**



# Auxilium College (Autonomous)

(Accredited by NAAC with A Grade with a CGPA of 3.58 out of 4 in the 3<sup>rd</sup> Cycle)

Gandhi Nagar, Vellore - 632 006.

## FACULTY RECORD

Name 1 R. Shalini  
Department 1 Physics  
Academic Year 1 2021-2022  
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Institutional Responsibility	Department Responsibility
	<ul style="list-style-type: none"><li>- Head In-charge</li><li>- class Tutor - <u>in</u> Physics</li><li>- Log - Book</li><li>- (Department minutes)</li></ul>

**LESSON PLAN**

Academic Year : 2021- 2022  
 Class : III B-SC PHYSICS  
 Subject : Atomic Physics and Spectroscopy  
 Hours / Week : 4 hrs / week  
 Credits : 5

Semester : V  
 Class Code :  
 Subject Code : UCPHH19  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
August <u>II</u> Week	4 hrs	<u>I</u>	positive rays - properties - e/m (Thomson's) parabola method - Aston's mass spectrograph - Dempster's mass Spectrograph	online (PPT)	e-books Modern Physics by Murugesan.	oral, online
<u>III</u> Week	4 hrs	<u>I</u>	critical potential - Experimental determination - Frank and Hertz method - Davis and Geiger's method.	online (PPT)	e-books Modern Physics by Murugesan	oral, online
Sep <u>I</u> week	3 hrs	<u>II</u>	Photo electric emission - laws Lenard's experiment - Richardson and Compton experiment.	online (PPT)	e-books Modern Physics by Murugesan	oral online
<u>II</u> week	4 hrs	<u>II</u>	Einstein's photo electric equation - Experimental Verification of Einstein's photoelectric equation - Millikan's expl.	online (PPT) offline chalk and Board	e-books - Modern Physics by Murugesan	oral, online, offline Test
<u>III</u> week	5 hrs	<u>II</u>	photo electric cells - Photo emissive cell - Photo-voltaic cell - photo conductive cell - applications.	online (PPT) offline chalk and Board	e-book - Modern Physics by Murugesan.	offline Test
<u>IV</u>						

Sepsect			Sommerfeld atom model - vector atom model - special Quantization - Electron Spin - Various quantum numbers.	online (PPT) offline (PPT) chalk and Board	Modern physics by Murugesan	oral Test slip Test class Test
V SS I		<u>II</u>	coupling scheme - L.S and j.J coupling Pauli's Exclusion principle - Electronic Configuration of elements and periodic classification	online (PPT) offline (PPT) chalk & Board	Modern physics by Murugesan	oral Test slip Test class Test
		<u>III</u>	Magnetic dipole moment of electron due to orbital and spin motion - Bohr magneton - Stern and Gerlach experiment - spin orbit coupling	online (PPT) offline chalk & Board	Modern physics by Murugesan	online offline
		<u>IV</u>	Spectral terms and notations - Selection rules - Intensity - Interval rule - Fine structure of Sodium D lines - Spectrum of Helium - Zeeman effect.	online (PPT) offline chalk & Board	Modern physics by Murugesan	online Te offline Te
Nov I		<u>V</u>	Larmor's theorem - Debye's explanation of normal Zeeman effect - Anomalous Zeeman effect - Theoretical explanation.	online (PPT) offline chalk & Board	Modern Physics by Murugesan	online offline
		<u>VI</u>	Lande's g factor and explanation of splitting of $D_1$ and $D_2$ lines - Coalescence of spectral lines.	online (PPT) Offline chalk & Board	Modern physics by Murugesan	only offline
		<u>VII</u>	Spectrum - Emission and Absorption spectra - Types of emission & Absorption			offline
		<u>VIII</u>	Electromagnetic Spectrum - Laws of Absorption UV and IR (Source Detector) - Double Beam Spectro Photometer - Scattering of light	online (PPT) offline chalk and Board	Modern physics by Murugesan	online offline
		<u>IX</u>	Rayleigh scattering - Raman effect (Exp & Theory) - Quantum theory - LESSON PLAN			

## LESSON PLAN

Academic Year : 2021-2022  
 Class : III B.Sc Physics  
 Subject : Physics for Competitive Examinations  
 Hours/Week : 2 hrs/week  
 Credits : 2

Semester : V  
 Class Code :  
 Subject Code : USPHC519  
 Total Hours :  
 Total Marks : 60

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I		I	Newton's laws of motion and its applications - conservative and frictional forces - Centrifugal and Coriolis forces - Kepler's law - Escape Velocity	online (PPT) offline (PPT) Chalk & Board	College Physics Book Netkan & Parker	online Test
II		I	Artificial Satellite - Gravitational law and field - Motion under a central force Moments of Inertia - Products of Inertia Principal moments and axes - Rigid body	online (PPT) offline (PPT)	Mechanics - DS - Mathur	online Test
I		I	Bernoulli's theorem - Elasticity - waves and SHM - Lissajous figures - Damped and undamped oscillators - wave eqn. Resonance - Doppler effect - ultrasonics - app	online (PPT) Chalk & Board offline (PPT)	Prop of matter by Murugesan	oral test
II		II	Thick lens formulae - power of a lens Fermat's principle - Rayleigh criterion - resolving power of a prism & grating - conditions for constructive and destructive	online (PPT) offline (PPT) Chalk & Board	Optics by Brijlal	oral test
III		II	Newton's rings - calculation of radius of curvature - Air wedge - calculation of bandwidth - Fresnel and Fraunhofer diffraction - linear, circular & elliptic	online (PPT) offline (Chalk & Board)	Optics by Brijlal	oral Test
IV		II	Double refraction and optical rotation - specific rotatory power of an optically active substance.	offline Chalk & Board	Optics by Brijlal	offline Test

<u>V</u> <u>ST</u>	<u>IV</u>	Electric charge - coulomb law - Gauss law Electric potential - capacitors - Energy stored in a capacitor - Dielectric & polarization - Ampere's law - Biot-savart law - Faradays self - Mutual - AC - Growth and decay of current and charge in LR circuit - RC - LCR circuit - Magnetic Permeability and suscepti- bility - Dia, para & ferromagnetism.	offline chalk & Board	Electricity & Magnetism by Murugesan	online Test
<u>II</u>	<u>III</u>	Measurement of Susceptibility, Hysteresis loop X-ray spectrum - Compton effect - Compton wavelength - Photoelectric effect.	offline chalk & Board	Electricity & Magnetism by Murugesan	offline Test
<u>III</u>	<u>IV</u>	De-Broglie wavelength of electrons - wave velocity and group velocity for De-Broglie waves - uncertainty principle	online PPT (slide share)	EM by Murugesan	oral Test
<u>IV</u>	<u>IV</u>	Pauli Exclusion principle - Mass defect Binding energy - Radioactive disintegration law - half life - Q value of Nuclear rxns: Nuclear fission and fusion.	online PPT offline - Board slide chalk	Modern Physics by Murugesan	oral Test
<u>7</u>	<u>IV</u>	Semiconductors - Rectifiers - Zener diode as voltage regulator - Transistor as an amplifiers.	online PPT	Modern Physics by Murugesan	oral Test
<u>II</u>	<u>V</u>	Relation between $\alpha$ and $\beta$ - Feed back amplifier - oscillators - Amplitude and frequency modulation - OR, AND,	online PPT offline (practical)	Basic Electronics R.S. Sedha <sup>by</sup>	online Test
<u>III</u>	<u>V</u>	NOR - NAND gates - OP Amps.	online PPT offline (practical)	Basic Electronics by R.S. Sedha	online Test
<u>IV</u>	<u>V</u>				

### LESSON PLAN

Academic Year : 2021 - 2022  
 Class : I Year  
 Subject : Everyday physics.  
 Hours / Week : 2  
 Credits : 2

Semester : I  
 Class Code :  
 Subject Code : USPHA120  
 Total Hours :  
 Total Marks : 60

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
<u>I</u>		<u>I</u>	Velocity - Acceleration - Momentum - Newton's laws of motion - First - second & Third Law	PPT online	Study materials	oral Test
<u>II</u>		<u>I</u>	Construction and working of Aeroplane - Jet plane - Rocket - Satellite - Relative Velocity	PPT online	Study materials	oral Test
<u>III</u>		<u>II</u>	Centripetal force - centrifugal force Applications - motion of cyclist along the circular path - Bending of curved Tracks.	PPT online	Study Materials	oral Test
<u>IV</u>		<u>II</u>	centrifuge - parking orbit - Escape velocity - orbital velocity	PPT (online) offline	Study materials	oral Test
<u>I</u>		<u>III</u>	photo electric effect - Nuclear fission - fusion - carbon - Nitrogen cycle (stellar energy)	PPT (online) offline	Modern Physics by Murugesan	offline Test
<u>II</u>		<u>III</u>	ThermoNuclear energy - proton proton cycle - semi conductors - doping - dopants - PN - Junction diode	chart & Board	Modern Physics by Murugesan	offline Test

III		III	semi-conductor diode - LED and its application - seven segment display.	offline		oral test
IV		IV	current - Voltage - ohm's law (AC & DC) - principle construction and working of emergency lamp.	offline chalk & Board		oral Test
I		IV	Principle construction and working of sodium and mercury vapour lamp	chalk & Board		oral Test
II		V	House wiring Accessories - switches - Types of switches - Lamp Holders.	chalk & Board		oral Test
III		V	Types of lamp Holders - ceiling Ropes - socket outlets	chalk & Board		oral Test
IV		V	plugs - wires and cables - Types of wiring systems (Tree & distribution system	chalk & Board		oral Test
I		V	Supply of electricity to the Houses - Fuse - Earthing.	chalk & Board		oral Test.



## LESSON PLAN

Academic Year : 2021-2022  
 Class : IV B.Sc Physics.  
 Subject : Relativity and Quantum mechanics.  
 Hours / Week : 3 hrs / week  
 Credits :

Semester : VI  
 Class Code :  
 Subject Code : UCPHK19  
 Total Hours : 5  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
Feb III		I	Frame of Reference - Inertial and Non-inertial frames - Galilean transformation equation.	Chalk and Board	Modern physics by Murugesan.	oral & class Test
IV		I	Michelson Morley Experiment - postulates of special theory of relativity - Lorentz transformation equations.	Chalk & Board	"	"
March I		I	Length contraction - Time dilation Relativity of simultaneity - Addition of velocities - Variation of mass with velocity.	"	"	"
II		I	Mass energy relation - Minkowski's four dimensional space - Elementary ideas of general theory of Relativity and its significance - Red shift.	"	"	"
Apr II		IV	Free particle solution of Schrodinger equation - Bound state problems. Particle in a box - wave equation and solution for the particle.	Chalk & Board	Quantum Mechanics by Satya prakash	oral & class Test

I		IV	Eigen values of energy - Normalization of the wave functions - simple harmonic oscillator - Squarwell potential	Chalk & Board	Quantum Mechanics by Sathyaprakash	Oral Test
May I, II IV (A)		IV	of finite depth - Rectangular potential barrier - Tunneling effect.	"	"	"
June I		IV	Rigid rotator - Moment of Inertia of a rigid rotator.	"	"	"
June I		V	wave equation for rigid rotator and its energy levels - wave functions for the rigid rotator	"	"	"

Academic Year : 2021-2022  
 Class : B.Sc Physics  
 Subject : Mobile Communication  
 Hours / Week : 2 1/2 week  
 Credits : -

Semester : VI  
 Class Code :  
 Subject Code : USPHD19  
 Total Hours :  
 Total Marks : 60

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
Feb IV		I	Introduction to cellular mobile communication - Push to talk - First generation - AMPS.	Chalk & Board	Mobile Communication G.K. Behera	oral Test
March I		I	Second generation - Advantages and disadvantages - Third generation Fourth generation.			slip Test
II		II	cellular concept - Frequency Reuse concept - channel Assignment - Handoff technique - Tracking		Mobile Communication Radha Krishna	Class Test
III		II	Grade of service - cell splitting cell - sectoring - free space propagation.			Home Test
IV		III	Free space propagation model Fraunhofer region - Properties of Radio waves.		Mobile Communication V. Jeyagan Ankita many	oral
April I		III	Concept of reflection - Diffraction Scattering - Interference.			oral

II	<u>IV</u>	<u>II</u>	Cell coverage for signal and Traffic. Introduction - propagation in near in distance - curves for near in propagation.	Chalk & Board	Mobile Communication G.K. Behera	oral
<u>IV, III</u>	<u>V</u>	<u>III</u>	Long distance propagation - Mobile to Mobile propagation - Doppler shift.	Chalk & Board	"	class test
<u>IV</u>	<u>V</u>	<u>IV</u>	Multiple Access Techniques. Introduction - FDMA - TDMA - CDMA	Chalk & Board	Mobile Communication G.K. Behera.	class test
<u>I</u>	<u>V</u>	<u>I</u> <sup>May June</sup>	Synchronous - CDMA soft - handover - hard handover - Roaming - SDMA.	Chalk & Board.	"	class test.
Sc- 5/12/12						



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Gandhi Nagar, Vellore - 632 006.

## FACULTY RECORD

Name : DR. A. PRIYADHARSHINI  
Department : PHYSICS  
Academic Year : 2021 - 2022  
Institutional Mail ID : priyadharshini@auxiliumcollege.edu.in  
Mobile No. : 9092588287  
ERP. ID : AUXMPH045

Institutional Responsibility	Department Responsibility
D	1) I-B.Sc PHYSICS Tutor 2) Incharge for Online Course 3) Association Incharge

**LESSON PLAN**

Academic Year : 2021-2022  
 Class : II - PHYSICS  
 Subject : Digital Electronics and Communication  
 Hours/Week : 2  
 Credits : 5

Semester : I  
 Class Code : KTCSHLV  
 Subject Code : UEPHA19  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	II	II	Modulation - Amplitude Modulation	PPT	Modern physics by R. Murugesan	Oral & Written test
II	II	IV	Mathematical analysis of AM Wave - Modulation Index (Modulation factor)	PPT	Modern physics by R. Murugesan	Oral & Written test
III	II	IV	Power in AM wave - frequency Modulation - Expression for frequency modulated Voltage	PPT	Modern physics by R. Murugesan	Oral & Written test
IV	II	IV	Demodulation - Ratio detector	PPT	Modern physics by R. Murugesan	Oral & Written test
V	II	IV	Block diagram of AM transmitting system - AM receiver: Principle of superhetrodyne receiver.	PPT	Modern physics by R. Murugesan	Oral & Written test
VI	II	IV	Block diagram of FM transmitting & receiving system.	PPT	Modern physics by R. Murugesan	Oral & Written test

<u>VI</u>	<u>II</u>	<u>V</u>	Antenna - Dipole and folded type antennas - array of antennas.	Board & chalk	Applied Electronics by Subramaniam	Oral & written test
<u>VII</u>	<u>II</u>	<u>V</u>	Sky wave propagation - the ionosphere - Effect of ionosphere on propagation of radio waves.	Morden physics by Murugesan. R	Morden physics by R. Murugesan	Oral & written test
<u>IX</u>	<u>II</u>	<u>V</u>	Eccles Larmon theory - skip distance and maximum usable frequency - fading.	Board & chalk	morden physics by R. murugesan	Oral & written test
<u>X</u>	<u>II</u>	<u>V</u>	Principle and working of radar - Duplexer	Board & chalk	Morden physics by R. murugesan	Oral & written test
<u>XI</u>	<u>II</u>	<u>V</u>	Range equation for radar - Application of radar	Board & chalk	Applied Electronics by Subramaniam	Oral & written test
<u>XII</u>	<u>II</u>	<u>V</u>	Synchronous counters - mod parallel counter - combination counter	Board & chalk	Applied Electronics by Subramaniam	Oral & written test
<u>XIII</u>	<u>II</u>	<u>V</u>	propagation of radio waves - propagation of ground waves - space wave propagation.	Board & chalk.	Applied Electronics by Subramaniam	Oral & written test
<u>XIV</u>	<u>II</u>	<u>III</u>	Decade Counter - Binary weight - Resistance divider method.	Board & chalk	Applied Electronics by Subramaniam	Oral & written test
<u>XV</u>	<u>II</u>	<u>III</u>	Binary ladder method -	Board & chalk	Applied Electronics by	Oral & written

Academic Year : 2021-2022  
 Class : II - B.Sc PHYSICS  
 Subject : Basic Electronics  
 Hours / Week : 3  
 Credits : 4

Semester : II  
 Class Code : 5FNABVW  
 Subject Code : UCPI120  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	III	II	Junction transistors - CB, CE modes - $\alpha, \beta$ of a transistor.	PPT	Basic electronics (B.E) by V.K. Mehta	Oral & written test
II	III	II	Transistor amplifier - method of transistor biasing - voltage divider method - Two port representation of a transistor.	PPT	Applied Electronics (A.E) by R.S. Sedtha	Oral & written test
III	III	II	h-parameters - Ac equivalent circuit of a transistor amplifier (CE) - Expression for current gain, voltage gain, I/P & O/P Impedance and power gain.	PPT	Morden physics (M.P) by R. Murugesan	Oral & written test
IV	III	II	RC coupled amplifier - frequency response curve - power amplifiers classification of amplifier.	PPT	A.E by R.S Sedtha	Oral & written test
V	III	II	class A power amplifier - push pull amplifier - class B power amplifier - Emitter follower.	PPT	M.P. by R. Murugesan	Oral & written test
VI	III	III	Feedback in amplifier - positive and negative feedback - Advantage of negative feedback	PPT	M.P by R. Murugesan	Oral & written test



<u>VII</u>	<u>III</u>	<u>III</u>	Oscillators - Oscillations in tank circuit	PPT	A.E by R.S. Seetha	Oral & written test
<u>VIII</u>	<u>III</u>	<u>III</u>	Barkhausen criterion - Hartley Oscillator	PPT	M.P by R. Murugesan	Oral & written test
<u>IX</u>	<u>III</u>	<u>III</u>	Colpitts Oscillators - Wien bridge Oscillator	PPT	M.P by R. Murugesan	Oral & written test
<u>X</u>	<u>III</u>	<u>III</u>	Phase shift Oscillator - Expression for the frequency of oscillation and conditions for oscillations in h parameters	Board & chalk	M.P by R. Murugesan	Oral & written test
<u>XI</u>	<u>III</u>	<u>III</u>	Expression for voltage gain, inverting and non inverting amplifiers	Board & chalk	M.P by R. Murugesan	Oral & written test
<u>XII</u>	<u>III</u>	<u>III</u>	Voltage follower, summer, Differentiator, Integrator	Board & chalk	A.E by Subramaniyan	Oral & written test
<u>XIII</u>	<u>III</u>	<u>III</u>	Multivibrators - Astable multivibrators using transistor and op-amp	Board & chalk	A.E by Subramaniyan	Oral & written test
<u>XIV</u>	<u>III</u>	<u>III</u>	Monostable Multivibrator using transistor and op-amp	Board & chalk	A.E by Subramaniyan	Oral & written test
<u>XV</u>	<u>III</u>	<u>III</u>	Bistable Multivibrator using	Board & chalk	A.E by Subramaniyan	Oral & written test

**LESSON PLAN**

Academic Year : 2021 - 2022  
 Class : II - B.Sc PHYSICS  
 Subject : SBE - Electrical Appliances  
 Hours / Week : II  
 Credits :

Semester : II  
 Class Code : PY32660  
 Subject Code : USPHB320  
 Total Hours :  
 Total Marks : 60

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	I	I	Effect of electric current - Safety precautions to be taken when working with electricity	PPT	Basic Electrical Engineering by B.E.E M.L. Anwani	Oral & Written test
II	II	I	Cause of fire on electrical appliances - precaution and remedial measures	PPT	B.E.E by M.L. Anwani	Oral & Written test
III	II	II	Fuse - Earthing	PPT	B.E.E by M.L. Anwani	Oral & Written test
IV	II	II	AC and DC	PPT	A.E by R.S. Sedtha	Oral & Written test
V	II	III	Single phase and three phase connections	PPT	B.E.E by M.L. Anwani	Oral & Written test
VI	II	III	Rms and peak values - Star and delta connection	PPT	B.E.E by M.L. Anwani	Oral & Written test

VII	II	II	Overloading - Earthing and Short circuiting	Board and chalk	B.E.E by M.L. Anwani	Oral & written test
VIII	II	II & III	Color code for insulation wire - Home wiring Accessories	Board & chalk	B.E.E by M.L. Anwani	Oral & written test
IX	II	III	Switches, types of switches and circuit breaker	Board & chalk	B.E.E by M.L. Anwani	Oral & written test
X	II	III	Lamp Holder, types of lamp holders, ceiling roses, socket outlets, plugs	Board & chalk	B.E.E by M.L. Anwani	Oral & written test
XI	II	III	Wire and cables, types of wiring system - supply of Electricity to home	Board & chalk	B.E.E by M.L. Anwani	Oral & written test
XII	II	II	Light effect - working of Electric bulb - Carbon arc Lamps - Sodium vapour Lamp	Board & chalk	B.E.E by M.L. Anwani	Oral & written test
XIII	II	II	Mercury Vapour Lamp - Grouping of Lamps: Lamps in series and parallel.	Board & chalk	B.E.E by M.L. Anwani	Oral & written test
XIV	II	II	Construction & working of domestic appliances - Electric Iron box - Immersion heater.	Board & chalk	B.E.E. by M.L. Anwani	Oral & written test
XV	II	II	Electric Stove - Washing	Board & chalk	B.E.E by M.L. Anwani	Oral & written test

## LESSON PLAN

Academic Year : 2021-2022  
 Class : I-B.Sc PHYSICS  
 Subject : Properties of Matter and Acoustics  
 Hours / Week : III  
 Credits : 5

Semester : I  
 Class Code : 02T9HP4  
 Subject Code : UCPHA20  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	III	II	Bending of beams - Expression for bending moment	PPT	Properties of Matter and Acoustics by R. Murugesan	Oral & written test
II	II	II	Cantilever - Determination of Young's modulus by cantilever oscillation	PPT	P.M.A by R. Murugesan	Oral & written test
III	III	II	Non-uniform bending - Determination of Young's modulus by Koenig's method	PPT	P.M.A by R. Murugesan	Oral & written test
IV	III	II	Uniform bending - Expression for elevation.	PPT	P.M.A by R. Murugesan	Oral & written test
V	II	II	Experiment to determine Young's modulus using Pin and microscope	PPT	PMA by R. Murugesan	Oral & written test
VI	II	III	Problems	PPT	PMA by R. Murugesan	Oral & written test

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<u>VII</u>	<u>III</u>	<u>IV</u>	Progressive wave - Characteristic of progressive wave	Board & Chalk	PMA by R. Murugesan	Oral & Written test
<u>VIII</u>	<u>III</u>	<u>IV</u>	Simple harmonic motion - Expression for free, damped and force oscillations	Board & chalk	PMA by R. Murugesan	Oral & Written test
<u>IX</u>	<u>III</u>	<u>IV</u>	Expression for velocity and Sound in a string - Melde's string	Board & chalk	PMA by R. Murugesan	Oral & Written test
<u>X</u>	<u>III</u>	<u>IV</u>	Determination of frequency of the vibrator in transverse and Longitudinal mode	Board & Chalk	PMA by R. Murugesan	Oral & Written test
<u>XI</u>	<u>III</u>	<u>IV</u>	Determination of specific gravity of solid and liquid by Melde's string	Board & chalk	PMA by R. Murugesan	Oral & Written test
<u>XII</u>	<u>III</u>	<u>IV</u>	Reverberation time - Sabine's formula - Absorption coefficient Acoustic aspect of hall and auditorium	Board & Chalk	PMA by R. Murugesan	Oral & Written test
<u>XIII</u>	<u>III</u>	<u>IV</u>	Introduction - characteristic properties of ultrasonic waves	Board & Chalk	PMA by R. Murugesan	Oral & Written test
<u>XIV</u>	<u>III</u>	<u>IV</u>	Stationary wave and resonance - Attenuation & Sources of ultra sound	Board & Chalk	PMA by R. Murugesan	Oral & Written test
<u>XV</u>	<u>III</u>	<u>IV</u>	Piezoelectric method and	Board & Chalk	PMA by	Oral & Written

Academic Year : 2021 - 2022  
 Class : I. B. Sc Mathematics  
 Subject : Allied physics - I  
 Hours / Week : II  
 Credits : 4

Semester : I  
 Class Code : BU21267  
 Subject Code : UAPHA20  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	II	I	Surface tension definition - Excess of pressure inside curved surface (curvilinear co-ordinates)	PPT	Allied physics by R. Murugesan	Oral & written test
II	II	I	Spherical and cylindrical drops and bubbles - problems	PPT	A.P by R. Murugesan	Oral & written test
III	II	II	Determination of Interfacial tension by the method of drops	PPT	A.P by R. Murugesan	Oral & written test
IV	II	II	Streamline and turbulent flow - critical velocity - viscous force - co-eff of viscosity of liquid	PPT	A.P by R. Murugesan	Oral & written test
V	II	II	Poiseuille's formula - Determination of co-eff of viscosity of liquid by Poiseuille's method - problems	PPT	A.P by R. Murugesan	Oral & written test
VI	II	II	Comparison of co-eff viscosities of two liquids using graduated burette - Ostwald's viscometer method	PPT	A.P by R. Murugesan	Oral & written test

III	II	II	Terminal Velocity - Stokes Law - Experimental determination of co-eff of viscosity of highly viscous liquid	Board & chalk	A.p by R. murugesan	Oral & written test
III	II	III	Properties of sound - Longitudinal and transverse waves - Expression for velocity of transverse vibrations along a stretched string - frequency of stretched string	Board and chalk	A.p by R. murugesan	Oral & written test
II	II	III	Law of transverse vibrations of strings - Determination of A.C frequency using sonometer - Problems	Board & chalk	A.p by R. murugesan	Oral & written test
II	II	III	Ultrasonics - piezo electric effect. Production of ultrasonic wave by piezo electric oscillator - production of ultrasonic wave by magnetostriction method	Board & chalk	A.p by R. murugesan	Oral & written test
II	II	III	Application of ultrasonics - Acoustic of buildings - Sabine's formula - Reverberation time	Board & chalk	A.p by R. murugesan	Oral & written test
III	II	III	Absorption co-efficient - factors affecting the acoustics of buildings.	Board & chalk	A.p by R. murugesan	Oral & written test
III	II	II	Interference - Definition - Condition for Interference - Interference in thin films (reflected light)	Board & chalk	A.p by R. murugesan	Oral & written test
III	II	II	Newton's ring - Determination of radius of curvature of lens by forming Newton's rings - Determination of diameter of thin wire by air wedge method	Board & chalk	A.p by R. murugesan	Oral & written test
III	II	II	Test for optical flatness - Diffraction Definition plane transmission grating	Board & chalk	A.p by R. murugesan	Oral & written test

**LESSON PLAN**

Academic Year : 2021 - 2022  
 Class : II - BSC PHYSICS  
 Subject : SOLID STATE PHYSICS AND MATERIAL SCIENCE  
 Hours / Week :  
 Credits :

Semester : II  
 Class Code :  
 Subject Code : UEPHC19  
 Total Hours :  
 Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	II	II	Energy band in solid - Electron in a periodic potential	Board & chalk	Solid state physics (SSP) by P.K. Palaniswamy	Oral & written test
II	II	II	Brillouin Zones construction - Crystal Imperfection	Board & chalk	SSP by P.K. Palaniswamy	Oral & written test
III	II	II	Point defect - line defect	Board & chalk	SSP by S.O. Pillai	Oral & written test.
IV	II	II	Surface defect - Effect of Crystal Imperfections.	Board & chalk	SSP by S.O. Pillai	Oral & written test
V	III	III	Dielectrics - Dielectric polarisability - Dielectric constant	Board & chalk	SSP by S.O. Pillai	Oral & written test
VI	III	III	Different types of Electric polarization (Ionic, Electronic and orientational polarization)	Board & chalk	SSP by S.O. Pillai	Oral & written test



<u>VI</u>	<u>II</u>	<u>III</u>	Frequency and temperature effect on polarization - Dielectric loss	Board & chalk	Engineering Physics by P. Mani	Oral & written test
<u>VIII</u>	<u>II</u>	<u>III</u>	Local field or internal field - Clausius-Mosotti Relation - Determination of dielectric constant	Board & Chalk	Engineering Physics by P. Mani	Oral & written test
<u>IX</u>	<u>II</u>	<u>II</u>	Dielectric breakdown - Properties of different type of insulating materials.	Board & chalk	Engineering physics by P. Mani	Oral & written test
<u>X</u>	<u>II</u>	<u>II</u>	AC Josephson effect	Board & chalk	SSP by S.L. Kakani	Oral & written test
<u>XI</u>	<u>II</u>	<u>II</u>	DC Josephson effect	Board & chalk	S.S.P by S.L. kakani	Oral & written test
<u>XII</u>	<u>II</u>	<u>II</u>	High temperature Superconductors	Board & chalk	S.S.P by S.L. kakani	Oral & written test
<u>XIII</u>	<u>II</u>	<u>II</u>	Application of Superconductors	Board & chalk	SSP by S.L. kakani	Oral & written test

III	II	III	Geiger Muller counter - Wilson cloud chamber	Board & chalk	Modern Physics by R. Murugesan	Oral Written test
VII	II	III	Bubble chamber - scintillation counter - Ionization chamber	Board & chalk	Modern Physics by R. Murugesan	Oral Written test
IX	II	III	Linear Accelerator - Betatron	Board & chalk	Modern physics by R. Murugesan	Oral & Written test
X	II	III	Synchrocyclotron - Proton synchrotron.	Board & chalk	Modern Physics by R. Murugesan	Oral & Written test
XI	II	II	Nuclear fusion - Source of stellar energy - thermo nuclear reaction	Board & chalk	Modern Physics by R. Murugesan	Oral & Written test
XII	II	II	Carbon - nitrogen cycle, Proton - Proton cycle - Hydrogen bomb	Board & chalk	Modern Physics by R. Murugesan	Oral & Written test
XIII	II	II	Elementary particles - Baryons - Hyperons - leptons - mesons - the quark model	Board & chalk	Modern Physics by R. Murugesan	Oral & Written test

**LESSON PLAN**

Academic Year : 2021 - 2022  
 Class : I - BSC PHYSICS  
 Subject : Thermal physics and - statistical mechanics  
 Hours / Week :  
 Credits :

Semester : II  
 Class Code :  
 Subject Code : UCPHB20  
 Total Hours :  
 Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	II	I	Heat engines - Ideal Heat Engine - statement of first law of thermodynamics - statement of 2 <sup>nd</sup> law	Board & Chalk	Thermal Physics by R. Murugesan	Oral & Written Test
II	II	II	Concept of entropy - Entropy of an Ideal gas - Reversible and Irreversible process and their Entropies.	Board & Chalk	Thermal Physics by R. Murugesan	Oral & Written Test
III	II	III	cannot theorem - proof of cannot theorem - Internal Combustion Engine	Board & Chalk	Thermal Physics by R. Murugesan	Oral & Written test
IV	II	IV	petrol and Diesel engines - first latent Heat equation and second latent heat equation	Board & Chalk	Thermal Physics by R. Murugesan	Oral & written test
V	II	V	thermodynamic scale of Temperature (or) work scale of temperature and its relation to perfect gas scale	Board & Chalk	Thermal physics by R. Murugesan	Oral & written test
VI	II	VI	Entropy temperature Diagrams - Maxwell's thermodynamic equations and its Applications	Board & Chalk	Heat & thermodynamic by Brijlal & Subrahmanyam	Oral & written test.

VII	III	II	Gibbs Helmholtz equation - Definition of free energy, enthalpy - Third law of thermodynamics	Board & Chalk	Heat and thermodynamics by Brijlala & Subrahmanyam	Oral & Written test
VIII	IV	III	Phase transition - first order and second order transition	Board & Chalk	Heat and thermodynamics by Brijlala & Subrahmanyam	Oral & Written test
IX	V	II	Quantum statistics - Fermi Dirac statistics	Board & Chalk	Heat and thermodynamics by Brijlala & Subrahmanyam	Oral & Written test
X	VI	II	Electron Gas - Bose Einstein statistics	Board & Chalk	Heat and thermodynamics by Brijlala & Subrahmanyam	Oral & Written test
XI	VII	II	photon Gas - Comparison of three statistics	Board & Chalk	Heat and thermodynamics by Brijlala & Subrahmanyam	Oral & Written test

Academic Year : 2021-2022  
 Class : I - B.Sc Mathematics  
 Subject : Allied Physics - II  
 Hours / Week :  
 Credits :

Semester : II  
 Class Code :  
 Subject Code : UAPHB20  
 Total Hours :  
 Total Marks : 100

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Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	II	II	Wave mechanics - Dual nature of matter - De Broglie Wave length problems	Board & chalk	Allied Physics by R. murugeshan	Orals & written test
II	II	II	Definition of phase velocity and Group velocity - Relationship b/w them - Experimental study of matter waves	Board & chalk	modern physics by R. murugeshan	Orals & written test
III	II	II	Davison and Germer's experiment - Heisenberg's Uncertainty principle - Determination of position of an electron with microscope	Board & chalk	modern physics by R. murugeshan	Orals & written test
IV	II	II	Diffraction of electron beam through a slit - proof for non-existence of electrons inside the nucleus	Board & chalk	modern physics by R. murugeshan	Orals & written test
V	II	II	Wave function - Properties of wave function - Basics Postulates of wave mechanics - Derive time dependent & Independent Schrodinger eqn	Board & chalk	modern physics by R. murugeshan	Orals & written test
VI	II	IV	Crystal - Definition of Unit cell - Miller Indices - Seven types of Crystal system - Definition of Bravais Lattice	Board & chalk	modern physics by R. murugeshan	Orals & written test

V	II	IV	Definition of Reciprocal lattice and its properties - Derivation of Bragg's Law - Fibre optics - optical fibre construction - principle	Board & chalk	Engineering physics by P. Mani	Oral & written test
VI	II	IV	Acceptance angle and condition for propagation through optical fibre classification of optical fibre	Board & chalk	Engineering physics by P. Mani	Oral & written test
VII	II	IV	Single mode, multimode - Step index and Graded index fibre - Step index single mode fibre	Board & chalk	Engineering physics by P. Mani	Oral & written test
VIII	II	IV	Step index multimode fibre - Graded index multimode fibre - Fibre optic communication system with block diagram.	Board & chalk	Engineering physics by P. Mani	Oral & written test
<sup>30</sup> IX	II	IV	Laser - Principle - Types of laser - semiconductor laser - Nd-YAG laser - Application of laser	Board & chalk	Engineering physics by P. Mani	Oral & written test
X	II	AV	Rectifier - Half and full wave rectifier - full wave bridge rectifier - construction - working and mathematical analysis	Board & chalk	Basic Electronics by V.K. Mutha	Oral & written test
XI	II	II	Filter - Types of filter - capacitor filter - choke input filter - $\pi$ section filter	Board & chalk	Basic Electronics by V.K. Mutha	Oral & written test
XII	II	II	Zener Diode - Characteristics of zener diode - Zener diode as Voltage Regulator	Board & chalk	Advanced physics by R. menagesha	Oral & written test



# Auxilium College (Autonomous)

(Accredited by NAAC with 'A' Grade with a CGPA of 3.55 out of 4 in the 3<sup>rd</sup> Cycle)

Gandhi Nagar, Vellore - 632 006.

## FACULTY RECORD

Name : DR. N.V. LAKSHMI  
Department : Physics [Shift II]  
Academic Year : 2021 - 2022  
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ERP. ID : AUXMPH047

Institutional Responsibility	Department Responsibility
<p>i) Member of Research and Publication Committee.</p> <p>ii) Member of Centre for Innovation and Business Incubation.</p> <p>iii) Member of Placement Cell &amp; Career Guidance.</p>	<p>i) 1<sup>st</sup> year Tutor</p> <p>ii) Incharge for Extension activities.</p> <p>iii) Incharge for Past Pupil.</p>

## LESSON PLAN

Academic Year : 2021-2022  
 Class : III Year  
 Subject : Electricity and Magnetism  
 Hours / Week : 2 hrs  
 Credits : 5

Semester : V  
 Class Code : M6POXdk  
 Subject Code : UCPHG19  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	2	<u>II</u>	capacitance - definition - Principle - Energy of a charged capacitor - loss of energy - force of attraction	PDF	Book - R. Murugesan Electri & Magnetism	oral test written test
2	2	<u>II</u>	Electrometers - Theory of quadrant Electrometer - Measurement - Heterostatic and Idiostatic uses	PDF	Electricity & Magnetism - R. Murugesan	oral test written test
3	2	<u>II</u>	Thermoelectricity - Seeback effect - Expression for Peltier and Thomson co-efficient	PDF	Electricity & Magnetism - R. Murugesan	oral test written test
4	2	<u>II</u>	Thermoelectric diagrams - uses - Maxwell's thermodynamics - Potentiometer - EMF of thermocouple	PDF	Electricity & Magnetism - R. Murugesan	oral test written test
5	2	<u>III</u>	Transient current - Growth & decay of current in a circuit containing inductance and resistance	PDF	Electricity & Magnetism - R. Murugesan	oral test written test
6	2	<u>III</u>	Growth & decay of charge in a circuit containing capacitance & resistance - Determination of HR	PDF	Electricity & Magnetism - R. Murugesan	oral test written test



7	2	III	Growth & Decay of Charge in LCR - Conditions for oscillations	PDF Chalk & Board	Electricity & Magnetism - R. Murugesan	oral test written test
8	2	III	Alternating current - Peak, average and RMS values of AC voltage.	PDF Chalk & Board	Electricity & Magnetism - R. Murugesan	oral test written test
9	2	III	Power factor and current values in an AC circuit LCR - series resonant circuit	PDF Chalk & Board	Electricity & Magnetism - R. Murugesan	oral test written test
10	2	III	Power in AC circuit	PDF Chalk & Board	Electricity & Magnetism - R. Murugesan	oral test written test
11	2	V	Magnetic induction - Magnetization - Susceptibility - permeability - Relation between $B$ , $H$ & $M$	PDF Chalk & Board	Electricity & Magnetism - R. Murugesan	oral test written test
12	2	V	Hysteresis loss - Experiment to draw M-H - importance of hysteresis curve - Ferrites.	PDF Chalk & Board	Electricity & Magnetism - R. Murugesan	oral test written test
13	2	V	Revision	PDF Chalk & Board	Electricity & Magnetism - R. Murugesan	oral test written test

## LESSON PLAN

**Academic Year** : 2021-2022  
**Class** : III Year  
**Subject** : Basic Electronics  
**Hours / Week** : 2 hrs  
**Credits** : 4

**Semester** : V  
**Class Code** : 17UZCKN  
**Subject Code** : UC PH 119  
**Total Hours** :  
**Total Marks** : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	2	I	Semiconductors - P type - N-type - PN diode - V-I characteristics - Zener diode - voltage regulator	PDF	Principles of Electronics - V. K. Mehta	oral & written test
2	2	I	Half wave & full wave rectifier - Theory - Expression for efficiency - ripple factor of rectifier	PDF	Principles of Electronics - V. K. Mehta	oral & written test
3	2	I	Filters - Types of filter circuit - Action - $\pi$ section filter - Diode voltage doubler - Multiplier	PDF	Principles of Electronics - V. K. Mehta	oral & written test
4	2	I	Clipping and clamping	PDF Chalk & Board	Principles of Electronics - V. K. Mehta	oral & written test
5	2	IV	Field effect transistor - JFET - Construction and working - output characteristics	PPT PDF Chalk & Board	Applied Electronics - A. Subramayan	oral & written test
6	2	IV	Difference between FET and bipolar transistor - Parameters of JFET	PPT PDF Chalk & Board	Applied Electronics - A. Subramayan	oral & written test

7	2	<u>IV</u>	MOSFET - Depletion and Enhancement - Description & Working	PDF Chalk & Board	Applied Electronics - A. Subramanyam	oral & written test
8	2	<u>IV</u>	UJT - Construction - Working - V-I characteristics - SCR - Working - V-I characteristics	PDF Chalk & Board	Applied Electronics - A. Subramanyam	oral & written test
9	2	<u>V</u>	Differential amplifier - gain - Common mode rejection ratio	PDF Chalk & Board	Integrated Electronics - V. Vijayendran	oral & written test
10	2	<u>V</u>	OP-AMP - characteristics of ideal OP-AMP - Expression for voltage Gain	PDF Chalk & Board	Integrated Electronics - V. Vijayendran	oral & written test
11	2	<u>V</u>	Inverting and non-inverting amplifier.	PDF Chalk & Board	Integrated Electronics - V. Vijayendran	oral & written test
12	2	<u>V</u>	voltage follower - Summer - Differentiator - integrator.	PDF Chalk & Board	Integrated Electronics - V. Vijayendran	oral & written test
13	2	<u>IV</u> <u>IV</u> <u>IV</u>	Revision	PDF Chalk & Board	Books.	oral & written test

## LESSON PLAN

Academic Year : 2021-2022

Class : III Year

Subject : Solid State Physics and Material Science

Hours / Week :

Credits :

Semester : VI

Class Code :

Subject Code : UEPHC19

Total Hours :

Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	2	I	Crystal Lattice - primitive and unit cell - seven classes of crystals	Chalk & Board	Solid State Physics by Gupta Kumar	oral & written test
2	2	I	Bravais Lattice - Miller indices - Structure of crystals - simple cubic	Chalk & Board	Solid State Physics by Gupta Kumar	oral & written test
3	2	I	Face centered cubic structure - Body centered cubic structure - Hexagonal closed packed structure	Chalk & Board	Solid State Physics by Mangovan	oral & written test
4	2	I	Reciprocal Lattice - Properties of reciprocal Lattice.	Chalk & Board	Solid State Physics by Mangovan	oral & written test
5	2	I	Bragg's law - Determination of crystal structure	Chalk & Board	Solid State Physics by Puri	oral & written test
6	2	I	The Laue method of x-ray diffraction - Powder crystal method	Chalk & Board	Solid State Physics by Puri	oral & written test

7	2	<u>IV</u>	Types of bonds in crystal - Ionic, covalent, metallic, Hydrogen	Chalk & Board	Solid state Physics by P.K. Palaniswamy	oral & written test
8	2	<u>IV</u>	Phonons of monoatomic one dimensional lattice - specific heat of solids	Chalk & Board	Solid state Physics by P.K. Palaniswamy	oral & written test
9	2	<u>IV</u>	Atomic heat - Dulong and Petit's Law	Chalk & Board	Solid state Physics by P.K. Palaniswamy	oral & written test
10	2	<u>IV</u>	Einstein's & Debye's theory - Cohesive energy of ionic crystals	Chalk & Board	Solid state Physics by P.K. Palaniswamy	oral & written test
11	2	<u>V</u>	Introduction - Properties of Superconductors - Type I and Type II Superconductors	Chalk & Board	Solid state Physics by Gupta Kumar	oral & written test
12	2	<u>V</u>	BCS Theory of Superconductors - Cooper pair - Lattice - Electron interaction - Meissner effect	Chalk & Board	Solid state Physics by Gupta Kumar	oral & written test

Academic Year : 2021-2022  
 Class : III Year  
 Subject : MICROPROCESSOR - 8085  
 Hours / Week : 2 hrs  
 Credits :

Semester : VI  
 Class Code :  
 Subject Code : UEPHE19  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	3	I	Binary and Hexa decimal system - Binary coded decimal and basic logic gates - D Flip Flop	Chalk & Board	Microprocessor 8085 by Vijayendran.V	oral & written test
2	3	I	D latches - Registers - Multiplexers and Demultiplexers	Chalk & Board	Microprocessor 8085 by Vijayendran.V	oral & written test
3	3	I	ROM and RAM - Microprocessor as CPU	Chalk & Board	Microprocessor 8085 by Vijayendran.V	oral & written test
4	3	I	Input and output unit - system and bus structure	Chalk & Board	Microprocessor 8085 by Vijayendran.V	oral & written test
5	3	I	Execution of an instruction - Pin functions and Architecture	Chalk & Board PPT	Microprocessor 8085 by Vijayendran.V	oral & written test
6	3	IV	Memory interface basics - Demultiplexing data bus - control signals	Chalk & Board PPT	Microprocessor 8085 by Vijayendran.V	oral & written test

7	3	<u>IV</u>	ROM/EPROM interface (2K x 8 EPROM, 4K x 8 ROM)	Chalk & Board & PPT	Microprocessor 8085 by vijayendran.v	oral & written test
8	3	<u>IV</u>	RAM interface (2K x 8 RAM interface, 2K x 8 RAM decoders)	Chalk & Board & PPT	Microprocessor 8085 by vijayendran.v	oral & written test
9	3	<u>IV</u>	out instruction and its timing diagram - IN instruction and its timing diagram	Chalk & Board	Microprocessor 8085 by vijayendran.v	oral & written test
10	3	<u>IV</u>	Memory mapped I/O - difference between memory mapped I/O & I/O mapped I/O	Chalk & Board	Microprocessor 8085 by vijayendran.v	oral & written test
11	3	<u>V</u>	Arranging number in ascending and descending orders - 16 bit addition using DAC	Chalk & Board	Microprocessor 8085 by vijayendran.v	oral & written test
12	3	<u>V</u>	Simple programs - code conversion BCD to Hex - Hex to BCD	Chalk & Board	Microprocessor 8085 by vijayendran.v	oral & written test

Academic Year : 2021-2022  
 Class : I Year  
 Subject : Thermal Physics & Statistical Mechanics  
 Hours / Week : 3 hrs  
 Credits :

Semester : II  
 Class Code :  
 Subject Code : UCPHB  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	3	I	co-efficient of Thermal Conductivity - Diffusivity - Rectilinear flow of heat - Fourier's	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test
2	3	I	Thermal conductivity of Bad conductors - 100's disc method - Relation - Thermal & Electrical	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test
3	3	I	wiedemann - Franz Law - Stefan's Law - Derivation of Newton's law of cooling - Stefan's const	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test
4	3	I	Planck's Quantum Theory of radiation - Deduction of Wien's Law & Rayleigh-Jeans law	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test
5	3	I	Solar constants - Temperature of Sun - Solar spectrum	Chalk & Board	Heat & Thermodynamics by Brijlax	oral & written test
6	3	IV	Joule Kelvin Effect - Temperature of inversion - Joule Kelvin effect	Chalk & Board	Heat & Thermodynamics by Brijlax	oral & written test



7	3	<u>IV</u>	Liquefaction of Hydrogen - Helium - Kammerling Onnes method Helium I & II	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test
8	3	<u>IV</u>	Lambda point - Production of low temperature - Adiabatic Demagnetization	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test
9	3	<u>IV</u>	Practical Applications of low temperature - Refrigerators - Air Condition machines	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test
10	3	<u>V</u>	Definition of Phase Space - Micro & Macro states - Different types of Ensembles - Probability	Chalk & Board	Heat & thermodynamics by Brijlal	oral & written test
11	3	<u>V</u>	Relation between Entropy and Probability - Classical Statistics - Boltzmann Statistics	Chalk & Board	Heat & thermodynamics by Brijlal	oral & written test
12	3		Problems Revision	Chalk & Board		oral & written test



# Auxilium College (Autonomous)

(Accredited by NAAC with A' Grade with a CGPA of 3.55 out of 4 in the 3<sup>rd</sup> Cycle)

Gandhi Nagar, Vellore - 632 006.

## FACULTY RECORD

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**Academic Year** : 2021-2022  
**Institutional Mail ID** : rajalakshmi.phy@auxiliumcollege.edu.in  
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**ERP. ID** : AUXMPHD46

Institutional Responsibility	Department Responsibility
① Incharge - Quiz club ② Incharge - Extension activity	① II B.Sc. Physics - Tutor ②

## LESSON PLAN

Academic Year : 2021-2022  
 Class : III, B.Sc, Physics  
 Subject : Electricity and Magnetism  
 Hours / Week : /week  
 Credits :

Semester : V  
 Class Code :  
 Subject Code :  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	I	Coulomb's law - permittivity of free space - Relative permittivity - Gauss law applications of Gauss law	PPT, Pdf PPT, Pdf	Electricity and magnetism by murugesan	Online Oral test Oral test
II	3	I	Electric field due to a uniformly charged sphere - electric potential	PPT, pdf	Electricity and magnetism by murugesan	oral test
III	3	I	Electric potential as line integral of electric field - Relation between electric potential and electric field	PPT, pdf	Electricity and magnetism by Murugesan	oral test
IV	3	I	Potential due to a uniformly charged conducting sphere - electric dipole - dipole moment	PPT, pdf	Electricity and magnetism by Murugesan	oral test
V	3	I	Electric potential and electric field due to a dipole - Poisson's and Laplace's equations	PPT, pdf	Electricity and magnetism by Murugesan	oral test
VI	3	IV	Biot and Savart's law (vector treatment) - magnetic induction due to a circular coil carrying current.	PPT, pdf chalk and board	Electricity & magnetism by murugesan	oral test

<u>VII</u>	3	<u>IV</u>	Force on a current carrying conductor placed in a uniform magnetic field.	PPT, pdf chalk and board	Electricity & Magnetism by Murugesan	written test oral test
<u>VIII</u>	3	<u>IV</u>	Moving coil Ballistic galvanometer - Construction & theory - Damping Damping correction - Conditions for dead beat	PPT, pdf, chalk and board	Electricity & Magnetism by Murugesan	oral test
<u>IX</u>	3	<u>IV</u>	Experimental method for figure of merit - Absolute capacity of a capacitor - Comparison of capacitance	PPT, pdf, chalk and board	Electricity & Magnetism by Murugesan	oral test
<u>X</u> 46	3	<u>IV</u>	comparison of EMFs of cells - self inductance and mutual inductance - self inductance of a long solenoid.	PPT, pdf chalk and board	Electricity & Magnetism by Murugesan	oral test
<u>XI</u>	3	<u>V</u>	mutual inductance of co-axial solenoids - eddy current and its uses properties of dia, para, ferro	PPT, pdf, chalk and board	Electricity & Magnetism by Murugesan	oral test
<u>XII</u>	3	<u>V</u>	Langevin's theory of dia and para magnetism - weiss theory of ferro magnetism	PPT, pdf chalk and board	Electricity & Magnetism by Murugesan	oral test

# LESSON PLAN

Academic Year : 2021-2022  
 Class : II, B.Sc, physics  
 Subject : mathematical methods of classical mechanics  
 Hours / Week :  
 Credits :

Semester : III  
 Class Code :  
 Subject Code :  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	I	Gradient of a scalar field - physical interpretation - line, surface, volume integrals	PPT, pdf	Mathematical physics by H.K.das Sathya prakash	oral test
II	3	I	Divergence and curl of vector function and its physical significance - Gauss divergence theorem	PPT, pdf	mathematical physics by H.K.dass, Sathya prakash	oral test
III	3	I	Application of vectors to hydrodynamics - heat flow in solids - gravitation and electromagnetic field	PPT, pdf	mathematical physics by H.K.dass Sathya prakash	oral test
IV	3	I	Introduction to matrices - Review of algebraic operations of matrices - properties of matrix multiplication	PPT, pdf	mathematical physics by H.K.dass, Sathya prakash	oral test
V	3	I	Eigen value - eigen vectors - characteristic equation of matrix - Cayley Hamilton theorem - diagonalization of matrices.	PPT, pdf	mathematical physics by H.K.dass, Sathya prakash	oral test
VI	3	II	Beta function - symmetry property of beta function - Evaluation of beta function ; Gamma function -	PPT, pdf chalk and board	mathematical physics by H.K.dass, Sathya prakash	oral test

<u>VII</u>	3	<u>II</u>	Evaluation of Gamma function - Legendre's differential equation and Legendre's functions	PPT, pdf chalk and board	Mathematical physics by H.K. Doss, Satya Prakash	oral test
<u>VIII</u>	3	<u>II</u>	Generating functions of Legendre's polynomial	PPT, pdf chalk and board	mathematical physics by H.K. Doss, Satya Prakash	oral test, written test
<u>IX</u>	3	<u>II</u>	Orthogonal properties of Legendre's Polynomials - Recurrence formulae.	PPT, pdf chalk and board	mathematical physics by H.K. Doss, Satya Prakash	written test
<u>X</u>	3	<u>II</u>	Recurrence formulae - Bessel's differential equation.	PPT, pdf chalk and board	mathematical physics by H.K. Doss, Satya Prakash	written test
<u>XI</u>	3	<u>III</u>	Measures of Skewness - Karl Pearson's Co-efficient of Skewness Bowley's coefficient of Skewness	PPT, pdf chalk and board	mathematical physics by H.K. Doss, Satya Prakash	oral test
<u>XII</u>	3	<u>III</u>	Distribution models - Binomial, Poisson and Normal distribution.	PPT, pdf chalk and board	mathematical physics by H.K. Doss, Satya Prakash	oral test

**LESSON PLAN**

Academic Year : 2021 - 2022  
 Class : III year NME  
 Subject : Fundamentals of physics  
 Hours / Week :  
 Credits :

Semester : V  
 Class Code :  
 Subject Code :  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	I	Position and displacement - velocity - speed - Newton's law of motion - Applications of Newton's III law - Fundamental forces in nature	PPT, pdf	Modern physics by murugesan	oral test
II	3	I	Apparent weight of a man in a lift work, power and energy, Application of centripetal and centrifugal forces.	PPT, pdf	modern physics by murugesan	oral test
III	3	II	Heat - measure of heat (temp) Specific heat - heat of fusion.	PPT, pdf	Heat & thermodynamics by Brijilal & Subramanian	oral test
IV	3	II	Heat of vaporization - transmission of heat - conduction convection Radiation.	PPT, pdf	Heat & thermodynamics by Brijilal & Subramanian	oral test
V	3	II	Peltier effect - superconductors - applications of super conductors.	PPT, pdf	Heat & Thermodynamics by Brijilal & Subramanian	oral test
VI	3	III	Sound - properties of sound - ultrasonics - different types of scans - medical applications of ultrasonics.	PPT, pdf, chalk and board	A Textbook of sound by Brijilal & Subramanian	oral test

<u>VII</u>	3	<u>III</u>	Clinical applications of different types of scans (obstetrics, early pregnancy, kidney and liver)	PPT, pdf, chalk and board	A text book of Sound by - Brijlax & Subramaniam	written test
<u>VIII</u>	3	<u>III</u>	Acoustics of buildings - Reverberation - acoustic aspects of hall and auditorium - light - properties of light	PPT, pdf, chalk and board	A text book of Sound by Brijilal & Subramaniam	oral test
<u>IX</u>	3	<u>III</u>	different types of lenses - Human eye - defects of vision - laser - and its medical applications.	PPT, pdf, chalk and board	A text book of Sound by Brijilal & Subramaniam	written test
<u>X</u>	3	<u>IV</u>	Atom - Nucleus - Atomic number - mass number - Nuclear fission - chain reaction - uncontrolled chain reaction	PPT, pdf, chalk and board	Modern physics by Brijilal & Subramaniam	oral test
<u>XI</u>	3	<u>IV</u>	Applications - atom bomb - controlled chain reaction - application - Nuclear reactor - Nuclear fusion - application.	PPT, pdf, chalk and board	Modern physics by Brijilal & Subramaniam	oral test
<u>XII</u>	3	<u>IV</u>	Hydrogen bomb - X-rays - production properties and medical application of X-rays.	PPT, pdf, chalk and board	Modern physics by Brijilal & Subramaniam	oral test
<u>XIII</u>	3	<u>V</u>	Gravitation - Newton's law of gravitation, Satellite motion, escape velocity, weightlessness in a satellite	PPT, pdf, chalk and board	The great Universe by G.K. Sadiharam.	oral test
<u>XIV</u>	3	<u>V</u>	Geo centric theory - Heliocentric theory - Kepler's law - The solar system	PPT, pdf, chalk and board	Astrophysics by K.S. Krishnaswamy	oral test



<u>VII</u>	3	<u>III</u>	postulates of quantum mechanics, operators for physical quantities,	Chalk and board	Quantum mechanics by Sathya Prakash	oral test
<u>VIII</u>	3	<u>III</u>	Eigen value equation. Eigen values & Eigen functions.	Chalk and board	Quantum mechanics by Sathya Prakash	oral test
<u>IX</u>	3	<u>III</u>	Schrodinger's equation - Time dependent and Time independent equation	Chalk and board	Quantum mechanics by Sathya Prakash	oral test
<u>X</u>	3	<u>III</u>	Expectation values, Expectation values of observables, Ehrenfest's theorem.	Chalk and board	Quantum mechanics by Sathya Prakash	oral test
<u>XI</u>	3	<u>V</u>	Schrodinger equation in spherical polar co-ordinates, Reduction of two body problems in to one body problem	Chalk and board	Quantum mechanics by Sathya Prakash	oral test
<u>XII</u>	3	<u>V</u>	Hydrogen atom, wave equations for the hydrogen atom, separation of variables, Azimuthal, polar & radial wave equations.	Chalk and board.	Quantum mechanics by Sathya Prakash	oral test

## LESSON PLAN

Academic Year : 2021 - 2022  
 Class : III year  
 Subject : Nuclear physics  
 Hours / Week :  
 Credits :

Semester : VI  
 Class Code :  
 Subject Code :  
 Total Hours :  
 Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Introduction and overview - classification of nuclei	chalk and board	Modern physics by Murugesan	oral test
II	2	I	General properties of Nucleus and Binding energy - Mass defect, packing fraction, Nuclear stability	chalk and board	Modern physics by Murugesan	oral test
III	2	I	Nuclear forces, Meson theory of Nuclear forces	chalk and board	Modern physics by Murugesan	oral test
IV	2	I	Nuclear models, liquid drop model, Weizacker's semi empirical mass formula.	chalk and board	Modern physics by Murugesan	oral test
V	2	I	Shell model, Evidences for magic numbers, collective model.	Chalk and board	Modern physics by Murugesan	oral test
VI	2	IV	Artificial transmutation of elements, Nuclear reactions,	Chalk and board	Modern physics by Murugesan.	oral test

<u>VII</u>	2	<u>IV</u>	Q - value for a Nuclear reaction Types of Nuclear reactions.	chalk and board	Modern physics by Murugesan	oral test
<u>VIII</u>	2	<u>IV</u>	Conservation laws of Nuclear reaction, Threshold energy of an endoergic reaction.	chalk and board	Modern physics by Murugesan	oral test
<u>IX</u>	2	<u>IV</u>	Discovery of neutron - detection and properties of neutron, thermal neutrons, Induced radioactivity	chalk and board	Modern physics by Murugesan	oral test
<u>X</u>	2	<u>IV</u>	Applications of radio isotopes in medicine, agriculture, industry, carbon dating.	chalk and board	Modern physics by Murugesan	oral test
<u>XI</u>	2	<u>V</u>	Discovery, Nuclear fission, calculation of energy in amu, energy released in fission, Bohr wheeler's theory of N.E	Chalk and board	Modern physics by Murugesan	oral test
<u>XII</u>	2	<u>V</u>	Chain reaction- atom bomb, Nuclear Reactors, power Reactors, Breeder Reactors.	Chalk and board.	Modern physics by Murugesan	oral test

## LESSON PLAN

Academic Year : 2021 - 2022  
 Class : II year  
 Subject : optics  
 Hours / Week :  
 Credits :

Semester :  
 Class Code :  
 Subject Code :  
 Total Hours :  
 Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	II	Dispersion - prism - Explanation of VIBGYOR - application - dispersion produced by a thin prism.	Chalk and board	Optics and Spectroscopy by Murugesan	oral test
II	2	II	Angular dispersion - Dispersive power of a prism - resolving power of a prism	Chalk and board	Optic and Spectroscopy by Murugesan	oral test
III	2	II	Combination of prisms to produce - dispersion without deviation and deviation and without dispersion	Chalk and board	Optics and Spectroscopy by Murugesan	oral test
IV	2	II	Achromatic prism - direct vision spectroscope - constant deviation Spectrometer	Chalk and board	Optics and Spectroscopy by Murugesan	oral test
V	2	II	Determination of refractive index of the material of small angled prism.	Chalk and board	Optics and Spectroscopy by Murugesan	oral test
VI	2	IV	Diffraction - Fresnel's Diffraction. Fresnel's idea of wave fronts - Fresnel's explanation of rectilinear propagation of light half period zones	Chalk and board	Optic and Spectroscopy by Murugesan	oral test

<u>VII</u>	2	<u>IV</u>	Comparison of half period zone and convex lens - diffraction at a circular aperture, straight edge.	Chalk and board	optics and spectroscopy by Murugesan	oral test
<u>VIII</u>	2	<u>IV</u>	Fraunhofer diffraction at a single slit and double slit. theory of plane diffraction grating.	Chalk and board	optics and spectroscopy by Murugesan	oral test
<u>IX</u>	2	<u>IV</u>	determination of wavelength using grating - dispersive power of a grating absent spectra - overlapping spectra - resolving power of a grating.	Chalk and board	optics and spectroscopy by Murugesan	oral test
<u>X</u> 56	2	<u>IV</u>	Diffraction bet: prism and grating - diffraction bet: Fraunhofer and Fresnel diffraction.	Chalk and board	optics and spectroscopy by Murugesan	oral test
<u>XI</u>	2	<u>V</u>	polarisation - double refraction by Huygens explanation of double refraction in uniaxial crystals	Chalk and board	optics and spectroscopy by Murugesan	oral test
<u>XII</u>	2	<u>V</u>	Nicol prism as a polarizer and analyser - Quarter & half wave plates, production and detection of a plane - circularly - elliptically polarized light.	Chalk and board	optics and spectroscopy by Murugesan	oral test
				Chalk and board.	optics and Spectroscopy by Murugesan	oral test

## LESSON PLAN

Academic Year : 2021 - 2022  
 Class : III year  
 Subject : NME - Fundamentals of physics  
 Hours / Week :  
 Credits :

Semester : VI  
 Class Code :  
 Subject Code :  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	I	Position & displacement - velocity - speed - Newton's laws of motion - Applications of Newton's III law - Fundamental forces in nature.	Chalk and board	Modern physics by Murugesan	oral test
II	3	I	Apparent weight of a man in a lift work, power & energy, Applications of centripetal & centrifugal forces.	chalk and board	Modern physics by Murugesan	oral test
III	3	II	Heat - measures of heat (temp) Specific heat - heat of fusion.	Chalk and board	Heat & Thermodynamics by Brijilal & Subramaniam	oral test
IV	3	II	Heat of vaporization - transmission of heat - conduction - convection - Radiation.	Chalk and board	Heat & Thermodynamics by Brijilal & Subramaniam	oral test
V	3	II	peltier effect - superconductors - applications of super conductors.	Chalk and board	Heat & Thermodynamics by Brijilal & Subramaniam	oral test
VI	3	III	Sound - properties of sound - ultrasonics - different types of Scans - medical applications of ultrasonics.	Chalk and board	A Text book of sound by Brijilal & Subramaniam.	oral test

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<u>VII</u>	3	<u>III</u>	clinical applications of different types of scars (obstetrics, early pregnancy, kidney & liver)	Chalk and board	A text book of sound by Brijlal & Subramaniam	oral test
<u>VIII</u>	3	<u>III</u>	Acoustics of buildings - Reverberation - acoustic aspects of hall & auditorium - light - properties of light	Chalk and board	A text book of sound by Brijlal & Subramaniam	oral test
<u>VIII</u>	3	<u>III</u>	different types of lenses - Human eye - defects of vision - laser & its medical applications	Chalk and board	A text book of sound by Brijlal & Subramaniam	oral test
<u>IX</u>	3	<u>IV</u>	Atom - Nucleus - Atomic number - mass number - Nuclear fission - Chain reaction - uncontrolled chain reaction	Chalk and board	Modern physics by Murugesan	oral test
<u>X</u>	3	<u>IV</u>	Application - atom bomb controlled chain reaction - application - Nuclear reactor - Nuclear fusion	Chalk and board	Modern physics by Murugesan	oral test
<u>XI</u>	3	<u>IV</u>	application - hydrogen bomb - X-rays - production - properties & medical applications of X-rays	Chalk and board	Modern physics by Murugesan	oral test
<u>XII</u>	3	<u>V</u>	Gravitation - Newton's law of gravitation - Satellite motion - escape velocity - weightlessness in a satellite	Chalk and board	The great universe by G.K. Sathidhan	oral test
<u>XIII</u>	3	<u>V</u>	Geocentric theory - Heliocentric theory - Kepler's laws of the solar system	Chalk and board	Astrophysics by K.S. Krishna Swamy	oral test



# Auxilium College (Autonomous)

(Accredited by NAAC with A<sup>+</sup> Grade with a CGPA of 3.55 out of 4 in the 3<sup>rd</sup> Cycle)

Gandhi Nagar, Vellore - 632 006.

## FACULTY RECORD

Name : S.PRABHA  
Department : PHYSICS  
Academic Year : 2021 - 2022  
Institutional Mail ID : prabhaphysics@auxiliumcollege.edu.in  
Mobile No. : 7598592027  
ERP. ID : AUXMPH340

Institutional Responsibility	Department Responsibility
1) Incharge - IQAC 2) Incharge - Quiz Club	1) II B.Sc Physics Tutor 2) Incharge for Online Course.



# LESSON PLAN

**Academic Year** : 2021 - 2022  
**Class** : III B.Sc. PHYSICS  
**Subject** : DIGITAL ELECTRONICS AND COMMUNICATION  
**Hours / Week** : 2 hrs / Week  
**Credits** : 5

**Semester** : V  
**Class Code** : abcobyk  
**Subject Code** : UEPHA19  
**Total Hours** :  
**Total Marks** : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Decimal and Binary systems, Decimal to binary and Binary to Decimal Conversion	PPT	Digital Electronics by 1) Malvino and Leach 2) VK PURI	Test in Google Class room
II	2	I	Boolean operations, logic expressions, laws, rules and simplification of Boolean expression	PPT	Digital Electronics by Malvino & Leach and V. Vijayarajan	Google class room-test
III	2	I	Fundamental products, Sum of product, Karnaugh map, pair, quads and octet.	PPT (online) Chalk & board (offline)	Digital Electronics by VK Puri and Vijayarajan	Test in Classroom
IV	2	I	Logic Gates, NOT gate, OR gate, AND, NAND, NOR, EX-OR, EX-NOR gates, Universal gates	PPT Chalk & board	Digital Electronics by Vijayarajan.V	Test in Classroom
V	2	II	Arithmetic Circuits, Adder, Half adder, Full adder, subtractor, Half subtractor.	PPT, e-book Pdf	Digital Electronics - P. Raja	Test in Google classroom
VI	2	II	Parallel binary adders and BCD adder	e-book Pdf, Video from website	Digital Electronics - P. Raja	Test in Classroom

<u>VII</u>	2	<u>II</u>	Multiplexers and Demultiplexers with suitable example.	e-book Pdf and PPT (Online) Chalk & board (offline)	Digital Electronics - P. Raja	Test in Google Classroom
<u>VIII</u>	2	<u>II</u>	Digital Logic Family, RTL NOR gate, DTL NAND gate.	PPT & Chalk and board	Digital Electronics - P. Raja	Test in Classroom
<u>IX</u>	2	<u>II</u>	TTL NAND gate and characteristics of TTL family.	PPT and Chalk & board	Digital Electronics - P. Raja	Test in Classroom.
<u>X</u>	2	<u>III</u>	RS Flip-Flop, clock pulses, clocked RS Flip Flop, and Preset, clear.	PPT and Chalk & board	Digital Electronics - Malvino and Leach	Oral & Written Test
<u>XI</u>	2	<u>III</u>	JK flip flop, Race around condition and JK Master Slave flip flop.	PPT and Chalk & board	Digital Electronics - Malvino and Leach	Oral & Class Test
<u>XII</u>	2	<u>III</u>	D flip flop, T flip flop and Asynchronous Counter.	PPT and Chalk & board	Digital Electronics - Malvino and Leach	Test in Classroom.

**LESSON PLAN**

Academic Year : 2021-2022  
 Class : II B-SC PHYSICS  
 Subject : MATHEMATICAL METHODS AND CLASSICAL MECHANICS  
 Hours / Week : 4  
 Credits : 5

Semester : III  
 Class Code : SKD4WTH  
 Subject Code : UCPH.D20  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	4	IV	Mechanics for a system of particle, Constraints, Holonomic, non-Holonomic Constraints and Degrees of freedom.	PPT	Classical Mechanics - J.C. Upadhyaya	Test in Google classroom
II	4	IV	Generalized coordinates, principle of Virtual work, D'Alembert's principle and Lagrange's equation	PPT	Classical Mechanics - J.C. Upadhyaya	Test in Google Classroom
III	4	IV	Lagrange's equation for dissipative forces, Applications of Lagrange's equation: Simple and compound pendulum	PPT (online) Chalk & board (Offline)	Classical Mechanics - J.C. Upadhyaya	Test in Google classroom
IV	4	IV	Central force and Equation of motion and first integrals.	PPT and Chalk & board.	Classical Mechanics - J.C. Upadhyaya	Classroom Test
V	4	V	Phase-space, Hamiltonian function, Hamilton's Equation and physical significance of Hamiltonian function.	PPT	Classical Mechanics - Gupta & Sharma	Test in Google Classroom
VI	4	V	Applications of Hamiltonian Equations: Simple and Compound pendulum.	PPT	Classical Mechanics - Gupta & Sharma	Test in Classroom

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<u>VII</u>	4	<u>V</u>	Poisson's bracket and properties of Poisson's bracket.	PPT and Chalk & board.	Classical Mechanics - Gupta & Sharma	Test in Classroom
<u>VIII</u>	4	<u>V</u>	Relation between Lagrange and Poisson bracket.	PPT	Classical Mechanics - Gupta & Sharma	Test in Classroom
<u>IX</u>	4	<u>V</u>	Application of Lagrangian and Hamiltonian for a charged particle.	PPT and Chalk & board.	Classical Mechanics - Gupta & Sharma	Test in Group's class room
<u>X</u>	4	<u>III</u>	Introduction to statistics and Measure of central tendency.	Chalk & board	Comprehensive statistical methods - P.N. Arora	Class test
<u>XI</u>	4	<u>III</u>	Measure of arithmetic mean, median and mode.	Chalk & board	Statistical Methods - N G Das	Assignments and class test
<u>XII</u>	4	<u>III</u>	Measure of dispersion, range, Quartile deviation, mean and standard deviation.	Chalk & board	Comprehensive statistical methods - P N Arora	Class test and assignment

Academic Year : 2021-2022  
 Class : I B-SC MATHEMATICS  
 Subject : ALLIED I : PHYSICS I  
 Hours / Week : 2  
 Credits : 4

Semester : I  
 Class Code : Pqcdps  
 Subject Code : UAPHA20  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Stress, strain, Hooke's law, Modulus in Elasticity and Poisson's ratio.	PPT	Allied Physics - R. Murugesan	Test in Google Classroom
II	2	I	Energy stored in the wire, bending of beams, Neutral axis and Expression for internal bending moment.	PPT	Allied Physics - R. Murugesan	Test in Google class-room
III	2	I	Cantilever, depression at the loaded end of a cantilever, Experimental determination of Young's Modulus - non Uniform bending	PPT and Videos from website	Allied Physics - R. Murugesan	Test in Google Classroom.
IV	2	I	SI form gages, Torsional couple, energy stored in a twisted wire and couple per unit twist.	e-book pdf.	Properties of Matter - Brij Lal	Test in Google Classroom.
V	2	I	Torsional pendulum and Determination of rigidity modulus by torsional oscillation and static torsion method.	e-book pdf and Videos from website	properties of Matter - Brij Lal	Test in Google Classroom.
VI	2	III	specific heat capacity and determination of specific heat capacity by method of mixture.	Chalk & board	Allied Physics - Shanalakshmi	Oral & written Test

<u>VII</u>	2	<u>III</u>	Half time radiation correction, specific heat capacity by Callender and Barne's method.	Chalk and board	Allied Physics - R. Murugesan	Oral and written Test
<u>VIII</u>	2	<u>III</u>	Newton's law of cooling and specific heat of liquid by Newton's law of cooling.	chalk & board	Allied Physics - R. Murugesan	Oral and written Test
<u>IX</u>	2	<u>III</u>	Joule Kelvin effect, Temperature inversion, Poynting flux experiment and Joule Kelvin theory	chalk & board	Allied Physics - R. Murugesan	Oral and written Test
<u>X</u>	2	<u>III</u>	Liquefaction of air by Linde's process, Liquefaction of Helium and its properties.	Chalk & board	Allied Physics - R. Murugesan	Oral and written Test
<u>XI</u>	2	<u>III</u>	Lambda point, Type I and Type II superconductors and Meissner effect, Magnetic levitation	chalk & board	Allied Physics - R. Murugesan	Assignments and Test
<u>XII</u>	2	<u>V</u>	Experimental determination of wavelength by transmission Grating and polarization by reflection	Chalk & board	Modern Physics - R. Murugesan	Oral and Assignments
<u>XIII</u>	2	<u>V</u>	Double refraction, Optical activity, specific rotatory power and function of half shade	Chalk & board	Modern Physics - R. Murugesan	written Test and Oral
<u>XIV</u>	2	<u>V</u>	Specific rotatory power of sugar solution and uses of polarized light.	Chalk & board	Modern physics - R. Murugesan	Assignments and Test.

Academic Year : 2021-2022  
 Class : III B.Sc. PHYSICS  
 Subject : ELECTIVE IIA : MICROPROCESSOR 8085  
 Hours / Week : 2 hrs / week  
 Credits : 5

Semester : VI  
 Class Code :  
 Subject Code : UEPHE19  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	II	Machine Language and assembly Language, Programmer's model of 8085	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
II	2	II	Data transfer instructions I, Arithmetic, logic and special instructions.	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
III	2	II	Assembly Language to Hex code, Data transfer instructions II, Branch instructions	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
IV	2	II	Stack related instructions, I/O and Machine control instructions, 8085 addressing mode	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
V	2	III	Introduction on 8085 instruction timings, Memory read cycle.	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Assignment and Oral
VI	2	III	Memory write cycle, Wait states	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test

VII	2	III	Halt state, Timing diagram for some instructions (MOV, MV, LXI, STA, DCI)	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
VIII	2	III	Delay calculations.	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
IX	2	V	Simple programs, Code conversion	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
X	2	V	8 bit addition, Subtraction	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
XI	2	V	Multiplication and Division	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test
XII	2	V	Arranging number in ascending & descending order	Chalk & board	Fundamentals of Microprocessor 8085 - V. Vijayandran	Oral and Written Test



Academic Year : 2021-2022  
 Class : II - B.Sc. PHYSICS  
 Subject : OPTICS  
 Hours / Week : 3  
 Credits : 5

Semester : II  
 Class Code :  
 Subject Code : UCPHE20  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	I	Lens and its types, optic center of lens, Principal foci and principal points.	Chalk & board	Optics and spectroscopy - Murugesan R.	Oral and Written Test
II	3	I	Thick Lens formula, power of thick lens Defects in Lenses and its minimizing method	Chalk & board	Optics and spectroscopy - Murugesan R.	Oral and Written Test
III	3	I	Spherical aberrations in lenses, contacts and out of contact, achromatic aberration in and out of contact	Chalk & board	Optics and spectroscopy - Murugesan R	Oral and Written Test
IV	3	I	Basic ideas of eyepiece, Ramsden's and Huygen's eyepiece and Comparison	Chalk & board	Optics and spectroscopy - Murugesan R	Oral and Written Test
V	3	III	Interference, conditions for interference, interference in thin films, Air Wedge	Chalk & board	A text of Optics - Bajjal	Oral and Written Test
VI	3	III	Test for optical flatness, Newton's ring, Michelson's Interferometer.	Chalk & board	A text of Optics - Bajjal	Oral and Written Test

VII	3	III	Jamin's and Rayleigh's interferometer Fabry - Perot interferometer	Chalk & board	Optics - Subramanyam	Oral and Written Test
VIII	3	III	Holography, Principle, construction and reconstruction, Application	chalk & board	Optics - Subramanyam	Assignment and Oral
IX	3	V	Optical Activity, Fresnel's explanation experimental Verification.	Chalk & board	Optics - Subramanyam	Oral and Written Test
X	3	V	Specific rotatory power, Laurent's half shade polarimeter	Chalk & board	Optics - Subramanyam	Oral and Written Test
XI	3	V	Kerr Effect, Faraday Effect	Chalk & board	Optics - Subramanyam	Assignment & Oral
XII	3	V	LCDs	Chalk & board	Optics - Subramanyam	Oral and Written Test

Academic Year : 2021-2022  
 Class : I. B.Sc. Mathematics  
 Subject : Allied II: Physics II  
 Hours / Week : 2  
 Credits : 4

Semester : II  
 Class Code :  
 Subject Code : UAPHB20  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Transient current, Growth and Decay of current containing inductance and resistance	Chalk & board	Electricity and Magnetism - R. Murugesan	Oral and Written Test
II	2	I	Growth and Decay of charge in RC circuit. Measure high resistance by Leakage Method	Chalk & board	Electricity and Magnetism - R. Murugesan	Written Test
III	2	I	Magnetic induction, Magnetization, susceptibility permeability, Relation between B, H, M and properties of dia, para and ferro magnetic.	Chalk & board	Electricity and Magnetism - Murugesan	Oral and Written Test
IV	2	I	Hysteresis loop, importance of hysteresis curve and choice of magnetic material.	Chalk & board	Electricity and Magnetism - Murugesan R.	Oral and Written Test
V	2	III	Artificial transmutation, Rutherford's experiment, Nuclear reaction, Q-value	Chalk & board	Allied Physics - R. Murugesan	Oral and Written Test
VI	2	III	Neutron, Neutron charge, Spin and magnetic moment of neutron, Boron detectors	Chalk & board	Allied Physics - R. Murugesan	Oral and Written Test

Academic Year : 2021-2022  
 Class : I. B.Sc. Mathematics  
 Subject : Allied II: Physics II  
 Hours / Week : 2  
 Credits : 4

Semester : II  
 Class Code :  
 Subject Code : UAPHB20  
 Total Hours :  
 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Transient current, Growth and Decay of current containing inductance and resistance	Chalk & board	Electricity and Magnetism - R. Murugesan	Oral and Written Test
II	2	I	Growth and Decay of charge in RC circuit Measure high resistance by Leakage Method	Chalk & board	Electricity and Magnetism - R. Murugesan	Written Test
III	2	I	Magnetic induction, Magnetization, susceptibility permeability, Relation between B, H, M and properties of dia, para and ferro magnetic.	Chalk & board	Electricity and Magnetism - Murugesan	Oral and Written Test
IV	2	I	Hysteresis loop, importance of hysteresis curve and choice of magnetic material.	Chalk & board	Electricity and Magnetism - Murugesan R.	Oral and Written Test
V	2	III	Artificial transmutation, Rutherford's experiment, Nuclear reaction, Q-value	Chalk & board	Allied Physics - R. Murugesan	Oral and Written Test
VI	2	III	Neutron, Neutron charge, Spin and magnetic moment of neutron, Boron detectors	Chalk & board	Allied Physics - R. Murugesan	Oral and Written Test

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VII	2	III	Proton recoil detectors, particle & Linear acceleration, Betatron	Chalk & board	Allied Physio - R. Murugesan	Oral and written test
VIII	2	III	Particle detectors, Wilson and cloud Chamber	Chalk & board	Allied Physio - R. Murugesan	Oral and written test
IX	2	V	Optoelectronic Devices, Photo Diode, Alarm circuit, Counter Circuit	Chalk & board	Principles of Electronics - V.K. Mehta	Oral and Written Test
X	2	V	Light Emitting Diode, power Indicator.	Chalk & board	Principles of Electronics - V.K. Mehta	Oral and Written Test
XI	2	V	Seven segment Display, solar cell	Chalk & board	Principles of Electronics - V.K. Mehta	Oral and Written Test
XII	2	V	Characteristics and Uses of solar cell	Chalk & board	Principles of Electronics - V.K. Mehta	Oral and Written Test