DEPARTMENT OF PHYSICS

LESSON PLAN

2022-2023

Auxilium College (Autonomous)

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

Gandhi Nagar, Vellore - 632 006.

FACULTY RECORD

Name : DR.A. PRIYADHARSHINI

Department : PHYSICS

Academic Year : 2022-2023

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ERP. ID : AUXPH0045

Institutional Responsibility	Department Responsibility
	1) I-B.Sc physics Tutor 2) Incharge for online course

TIME TABLE

ODD SEMESTER

Hour / Day Order	1	2	3	4	5
I			PRACTCAL ← 1st B.Sc PHYSICS →		
II		D.E III - B.Sc PHYSICS	POMA I - PHYSICS		
III				SBE II - PHYSICS	POMA I - PHYSICS
IV	B.E III - PHYSICS			EM III - PHYSICS	
V	SBE II - PHYSICS			EM III - PHYSICS	
VI	POMA I - PHYSICS	DE III - PHYSICS		BE III - PHYSICS	

EVEN SEMESTER

Hour / Day Order	1	2	3	4	5
I	OPTICS II - PHYSICS		PRACTCAL ← 1st B.Sc PHYSICS →		
II	NUCLER PHYSICS III - PHYSICS				II M.Sc CMP
III		SBE II - PHYSICS	PRACTCAL ← III - B.Sc PHYSICS →		
IV	NUCLER PHYSICS III - PHYSICS			THERMAL PHYSICS ← I - B.Sc PHYSICS	
V	SBE II - PHYSICS	II M.Sc CMP		THERMAL PHYSICS I - PHYSICS	
VI	OPTICS II - PHYSICS			NUCLEAR PHYSICS III - PHYSICS	

LESSON PLAN

LESSON PLAN

Academic Year : 2022 - 2023
Class : III - B.Sc Physics
Subject : Electricity and Magnetism
Hours / Week : 2
Credits : 5

Semester : V
Class Code :
Subject Code : UCPHG20
Total Hours :
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	II	III	Capacitance - Definition - Principle - Energy of charged capacitor	Board & Chalk	Electricity and Magnetism (EM) by R. Murugeshan	Oral & Written test
II	II	III	Loss of energy on sharing of charge - Force of attraction between the Plates of a charged capacitor	Board & Chalk	EM by R. Murugeshan	Oral & Written test
III	II	IV	Electrometers - construction and working of Quadrant electrometer - Theory of quadrant electrometer - Heterostatic and Idiostatic uses.	Board & Chalk	E.M by R. Murugeshan	Oral & Written test
IV	II	III	Thermoelectricity - Seeback effect - Peltier effect - Thomson effect - Expression for Peltier and thomson co-efficients.	Board & Chalk	E.M. by R. Murugeshan	Oral & written test
V	II	III	Thermodynamics of thermocouple - Thermo-electric diagrams and its uses	Board & chalk	E.M. by R. Murugeshan	Oral & Written test
VI	II	III	Potentiometer - Principle - EMF of thermocouple using potentiometer	Board & Chalk	E.M by R. Murugeshan	Oral & Written test

VII	II	III	Transient current (DC) - Growth and decay of current in a circuit containing inductance and Resistance - time constant.	Board & Chalk	E.M by R. Murugeshan	Oral & Written Test
VIII	II	III	Growth and decay of charge in a circuit containing capacitance and resistance - time constant	Board & Chalk	E.M. by R. Murugeshan	Oral & Written Test
IX	IV	III	Determination of high Resistance by Leakage - Problems	Board & Chalk	E.M. by R. Murugeshan	Oral & Written test
X	II	III	Growth and decay of charge in LCR circuit - conditions for Oscillations	Board & Chalk	E.M by R. Murugeshan	Oral & Written test
XI	II	III	Alternating current - peak, average and Rms Values of Ac Voltage	Board & Chalk	E.M by R. Murugeshan	Oral & Written test
XII	II	III	Ac circuit containing Resistance, Inductance and capacitance	Board & Chalk	EM by R. Murugeshan	Oral & Written test
XIII	II	III	Resonant frequency - Problems - power in Ac circuit	Board & chalk	EM by R. Murugeshan	Oral & Written test

LESSON PLAN

LESSON PLAN

Academic Year : 2022 - 2023
Class : Basic Electronics (III - B.Sc physics)
Subject : ∩
Hours / Week : 2
Credits : 4

Semester : V
Class Code :
Subject Code : UCPH120
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	Transistors, Junction transistors - CB, CE modes, α, β of a transistor	Board and chalk	Basic Electronics (B.E) by V.K. metha	Oral & written test
II	II	II	Transistor amplifier - method of transistor biasing - voltage divider method - Two port representation of a transistor	Board & chalk	Applied Electronics (A.E) by R.S. Sedha	Oral & written test
III	II	II	h-parameters - AC equivalent circuit of a transistor amplifier (CE) - Expression for current gain, voltage gain, I/P L O/P Impedance and Power gain	Board & chalk	Modern physics (M.P) by R. Murugesan	Oral & written test
IV	II	II	RC coupled amplifier - frequency response curve - Power amplifier classification of amplifier	Board & Chalk	A.E by R.S Sedha	Oral & written test
V	II	II	Class A power amplifier - push pull amplifier - class B power amplifier - Emitter follower	Board & chalk	M.P by R. Murugesan	Oral & written test
VI	II	II	Feedback in amplifier - positive and negative feedback - Advantage of negative feedback	Board & chalk	M.P by R. Murugesan	Oral & written test

VII	I	XI	Oscillators – Oscillations in tank circuit	Board & Chalk	A.E by Rs. Sedha	Oral & Written test
VIII	II	XII	Barkhausen criterion – Hartley Oscillator	Board & Chalk	M.P. by R. Murugeshan	Oral & Written test
IX	II	XIII	Colpitts Oscillator – Wien bridge Oscillator.	Board & Chalk	M.P by R. Murugeshan	Oral & Written test
X	II	XIII	Phase Shift Oscillator – Expression for the frequency of Oscillation and Conditions for oscillations in h-parameters	Board & Chalk	M.P by R. Murugeshan	Oral & Written test
XI	II	V	Expression for Voltage gain, Inverting and non-Inverting amplifier	Board & Chalk	M.P by R. Murugeshan	Oral & Written test
XII	II	V	Voltage follower, Summer, Differentiator, Integrator	Board & Chalk	A.E by Subramaniyan	Oral & Written test
XIII	II	V	multivibrators – A stable multivibrators using transistor and op-amp	Board & Chalk	A.E by Subramaniyan	Oral & Written test
XIV	II	V	monostable multivibrator using transistor and op-amp	Board & Chalk	A.E by Subramaniyan	Oral & Written test
XV	II	V	Bistable multivibrator using transistor and op-amp	Board & Chalk	A.E by Subramaniyan	Oral & Written test

LESSON PLAN

XXV	II	V	transistor and op-amp			

LESSON PLAN

Academic Year : 2022 - 2023
Class : III - Physics
Subject : Digital Electronics and communication
Hours / Week : 2
Credits : 5

Semester : V
Class Code :
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	IV	Modulation – Amplitude modulation	Board & chalk	Modern physics (M.P) by R. Murugeshan	Oral & written test
II	III	IV	Mathematical analysis of AM wave - modulation Index (modulation factor)	Board & Chalk	M.P by R. Murugeshan	Oral & written test
III	II	IV	Power in AM wave - Frequency modulation - Expression for frequency modulated voltage	Board & chalk	M.P by R. Murugeshan	Oral & written test
IV	III	IV	Demodulation – Ratio detector	Board & chalk	M.P by R. Murugeshan	Oral & written test
V	III	IV	Block Diagram of AM transmitting System – AM receiver: principle of Superhetrodyne receiver	Board & Chalk	M.P by R. Murugeshan	Oral & written test
VI	II	IV	Block diagram of FM transmitting & receiving System	Board & chalk	M.P by R. Murugeshan	Oral & written test

VII	II	V	Antenna – Dipole and folded type antennas – array of antennas	Board & chalk	Applied (A.P) Electronics by Subramaniam	Oral & written test
VIII	II	V	Propagation of Radio waves – Propagation of ground waves – Space wave propagation	Board & chalk	M.P by R. Muruganthan	Oral & written test
IX	II	V	Sky wave propagation – the Ionosphere – Effect of Ionosphere on propagation of radio waves	Board & chalk	M.P by R. Muruganthan	Oral & written test
X	II	V	Eccles Larmor theory – Skip distance and maximum usable frequency – fading	Board & chalk	M.P by R. Muruganthan	Oral & written test
XI	II	V	Principle and Working of Radar – Duplexer – Range equation of radar – Application of Radar	Board & chalk	A.P by Subramaniam	Oral & written test
XII	II	VI	Synchronous counters – mod & parallel counter – combination counter	Board & chalk	A.P by Subramaniam	Oral & written test
XIII	II	IX	Decade counter – Binary weight – Resistance divider method	Board & chalk	A.P by Subramaniam	Oral & written test
XIV	II	IX	Binary Ladder method – Simultaneous conversion	Board & chalk	A.P by Subramaniam	Oral & written test

LESSON PLAN

Academic Year : 2022-2023
Class : II-B.Sc physics
Subject : SBE: Electrical Appliances
Hours / Week : II
Credits : 2

Semester : III
Class Code :
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	II	I	Effect of electric current - Safety precautions to be taken When working with electricity	Board & Chalk	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	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
III	II	I	Fuse - Earthing	Board & chalk	B.E.E by M.L Anwani	Oral & written test
IV	II	II	AC and DC	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
V	II	II	Single phase and three Phase connections	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
VI	II	II	Rms and peak values - star and delta connection	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test

VII	II	II	Overloading - Earthing and Short circuiting	Board & chalk	B.E.E by M.L. Anwani	Oral & written test
VIII	II	II & III	Colour code for insulation Wire - Home wiring Accessories	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
IX	II	III	Switchs, 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	IV	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	IV	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	V	Construction & Working of domestic Appliances - Electric Iron box - Immersion heater	Board & chalk	B.E.E by M.L. Anwani	Oral & written test
XV	II	V	Electric stove - Washing machine - Air conditioner	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test

LESSON PLAN

LESSON PLAN

Academic Year : 2022-2023
Class : I-B.Sc. Physics
Subject : Properties of matter and Acoustics
Hours / Week : III
Credits : 5

Semester : I
Class Code :
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	Board & Chalk	Properties of matter and Acoustics by R. Murugeshan	Oral & written test
II	III	II	Cantilever - Determination of young's modulus by cantilever oscillation	Board & Chalk	P.M.A by R. Murugeshan	Oral & written test
III	III	II	Non-Uniform bending - Determination of young's modulus by koenig's method	Board & Chalk	P.M.A by R. Murugeshan	Oral & written test
IV	III	II	Uniform bending - Expression for elevation	Board & Chalk	P.M.A by R. Murugeshan	Oral & written test
V	III	II	Experiment to determine young's modulus using pin and microscope	Board & Chalk	PMA by R. Murugeshan	Oral & written test
VI	III	II	Problems	Board & Chalk	PMA by R. Murugeshan	Oral & written test

VII	III	IV	Progressive Wave – Characteristic of progressive wave	Board & Chalk	PMA by R.murugeshan	Oral & written test
VIII	III	IV	Simple harmonic motion – Expression for free, damped and force Osillations	Board & Chalk	PMA by R.murugeshan	Oral & written test
IX	III	IV	Expression for velocity and sound in a string – melde's string	Board & Chalk	PMA by R.murugeshan	Oral & written test
X	III	IV	Determination of frequency of the vibrator in transverse and Longitudinal mode	Board & Chalk	PMA by R.murugeshan	Oral & written test
XI	III	IV	Determination of Specific gravity of Solid and Liquid by melde's String	Board & chalk	PMA by R.murugeshan	Oral & written test
XII	III	V	Reverberation time – Sabine's formula – Absorption co-efficient – Acoustic aspect of hall and auditorium.	Board & Chalk	PMA by R.murugeshan	Oral & written test
XIII	III	V	Introduction – Characteristics Properties of ultrasonic waves	Board & Chalk	PMA by R.murugeshan	Oral & written test
XIV	III	V	Stationary Wave and Resonance – Attenuation & sources of ultra sound	Board & Chalk	PMA by R.murugeshan	Oral & written test
XV	III	V	Piezo electric method and Magnetostriction method	Board & Chalk	PMA by R.murugeshan	Oral & written test

LESSON PLAN

Academic Year : 2022-2023
Class : II - M.Sc Physics
Subject : Condensed Matter Physics
Hours / Week : 2
Credits :

Semester : IV
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	II	IV	Elementary ideas of dia, para and ferromagnetism	Board & Chalk	Solid state physics (SSP) by Guptha Kumar	Oral & Written test
II	II	IV	Quenching of orbital angular momentum - Quantum theory of paramagnetism	PPT	SSP by Guptha kumar	Oral & written test
III	II	IV	Rare earth ion - Hund's rule - Adiabatic demagnetization	PPT	SSP by Guptha kumar	Oral & written test
IV	II	IV	Quantum theory of ferromagnetism - Curie point Exchange integral	PPT	SSP by S.O. pillai	Oral & written test
V	II	IV	Heisenberg's Interpretation of weiss field	PPT	SSP by S.O. pillai	Oral & Written test
VI	II	IV	ferromagnetism domains - Bloch wall	PPT	SSP by Guptha Kumar	Oral & Written test

VII	II	IV	Spin wave quantization – magnons. Thermal excitation of magnons	Board & Chalk	SSP by Guptha Kumar	Oral & written test
VIII	II	IV	Curie temperature and susceptibility of ferromagnetism – theory of anti ferromagnetism – Neel temperature.	Board & Chalk	SSP by Guptha Kumar	Oral & written test
IX	II	V	Experimental facts – occurrence – Effect of magnetic fields – Meissner effect	Board & Chalk	SSP by K. Ilangovan	Oral & written test
X	II	V	Entropy and heat capacity – Energy Gap – Microwave and Infrared properties	Board & Chalk	SSP by S.O. Pillai	Oral & written test
XI	II	V	Type I and Type II Super conductors – theoretical explanation	Board & Chalk	SSP by K. Ilangovan	Oral & written test
XII	II	V	Theromodynamics of super conducting transition – London equation	Board & Chalk	SSP by S.O. Pillai	Oral & written test
XIII	II	V	Coherence length – Single particle tunneling – Josephson tunneling	Board & chalk	SSP by K. Ilangovan	Oral & written test
XIV	II	V	DC and AC Josephson's effect	Board & Chalk	SSP by Kakani	Oral & written test
XV	II	V	High temperature superconductor – squids	Board & Chalk	SSP by Kakani	Oral & written test

				Chalk		Test

LESSON PLAN

Academic Year : 2022 – 2023
Class : III – B.Sc PHYSICS
Subject : Nuclear Physics
Hours / Week : III
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	III	II	Fundamental Laws of radio activity – Laws of Radioactive distintegation	Board & Chalk	Modern Physics (MP) by R.Murugeshan	Oral & written test
II	III	II	mean life – Half life – measurement of decay constants	Board & chalk	M.P by R.Murugeshan	Oral & written test
III	III	II	Law of Successive disintegration Age of the earth	Board & chalk	M.P by R.Murugeshan	Oral & written test
IV	III	II	Biological effects of nuclear radiations – Discovery of natural Radioactivity	Board & chalk	M.P by R.Murugeshan	Oral & written test
V	III	II	Gamow's theory of alpha decay – Alpha ray Spectra	Board & chalk	M.P by R.Murugeshan	Oral & written test
VI	III	II	Beta decay – Beta decay Spectra – Origin of the line and continuous Spectrum	Board & chalk	M.P by R.Murugeshan	Oral & Written test.

VII	III	II	Neutrino theory of Beta decay- Gamma ray spectra – Origin of gamma ray – nuclear isomerism	Board & Chalk	MP by R. Murugeshan	Oral & Written test
VIII	III	III	Geiger mullar counter – Wilson Cloud chamber	Board & Chalk	MP by R. Murugeshan	Oral & written test
IX	III	IV	Bubble Chamber – Scintillation counter – Ionization Chamber – Linear Accelator	Board & Chalk	MP by R. Murugeshan	Oral & written test
X	III	V	Betatron – Synchrocyclotron – Protosynchrocychrotron	Board & Chalk	MP by R. Murugeshan	Oral & Written test
XI	IV	V	Nuclear fusion – Source of stellar energy – thermo nuclear reaction	Board & Chalk	MP by R. Murugeshan	Oral & written test
XII	IV	V	Carbon – nitrogen cycle – proton – proton cycle	Board & chalk	MP by R. Murugeshan	Oral & Written test
XIII	IV	V	Hydrogen bomb – Elementary particles	Board & Chalk	MP by R. Murugeshan	Oral & written test
XIV	IV	V	Baryons – Hyperons – Leptons – mesons	Board & chalk	MP by R. Murugeshan	Oral & written test
XV	IV	V	The Quark model	Board & chalk	MP by R. Murugeshan	Oral & written test

LESSON PLAN

Academic Year : 2022-2023
Class : II-B.Sc physics
Subject : Optics
Hours / Week : 4
Credits :

Semester : IV
Class Code :
Subject Code : UCPHE20
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	4	IV	Dispersion - prism - Explaining VIBGYOR - application	Board & chalk	Optics by R. Murugeshan	Oral & written test
II	4	IV	Dispersion produced by a thin prism - angular dispersion	Board & chalk	Optics by R. Murugeshan	Oral & written test
III	4	IV	Dispersive power of prism - Resolving power of prism	Board & chalk	Optics by R. Murugeshan	Oral & written test
IV	4	IV	Combination of prism to produced Dispersion without deviation and deviation without dispersion	Board & chalk	Optics by R. Murugeshan	Oral & written test
V	4	IV	Achromatic prism - Direct vision spectroscope - constant deviation spectrometer	Board & chalk	Optics by R. Murugeshan	Oral & written test
VI	4	IV	Determination of Refractive index of the material of Small angled prism	Board & chalk	Optics by R. Murugeshan	Oral & written test

VII	II	IV	Diffraction: Fresnel's Diffraction – Fresnel's Ideas Wave fronts	Board & Chalk	Optics by R. Murugeshan	Oral & written Test
VIII	II	IV	Fresnel's ideas explanation of Rectilinear propagation of light – half period zones – comparision of Half period one and convex lens.	Board & Chalk	Optics by R. Murugeshan	Oral & written test
IX	II	IV	Diffraction at a circular aperture straight edge, Fraunhofer diffraction Single slits double slits Theory of plane grating.	Board & Chalk	Optics by R. Murugeshan	Oral & written test
X	II	IV	Determination of wavelength using grating – Dispersive power of grating – absent spectra – overlapping spectra	Board & Chalk	Optics by R. Murugeshan	Oral & written test
XI	II	IV	Resolving power grating – Difference between prism and grating – Difference between Fresnel and Fraunhofer diffraction	Board & Chalk	Optics by R. Murugeshan	Oral & written test
XII	II	V	Optical activity – Fresnel's explanation – experimental verification	Board & Chalk	Optics by Brijlal	Oral & written test
XIII	II	V	Specific Rotatory power.	Board & Chalk	Optics by Brijlal	Oral & written test
XIV	II	V	Determination of Specific Rotatory power by Laurent's half shade polarimeter	Board & Chalk	Optics by Brijlal	Oral & written test
XV	II	V	Kerr Effect and Faraday Effect	Board & Chalk	Optics by Brijlal	Oral & written Test

LESSON PLAN

Academic Year : 2022 - 2023
Class : II - B.Sc physics
Subject : SBE : Electrical appliances - B
Hours / Week : II
Credits : 2

Semester : IV
Class Code :
Subject Code : USPHC320
Total Hours :
Total Marks : 60

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	II	I	Resistance – Resistor in series and in parallel – capacitance	Board & Chalk	Basic Electrical Engineering by (B.E) M.L. Anwani	Oral & written test
II	II	I	capacitors in series and in parallel	Board & chalk	BEE by Anwani	Oral & written test
III	II	I	Electrical Charge – current – Electrical potential – ohm's Law – Galvanometer, Ammeter	Board & chalk	B.E.E by Anwani	Oral & written test
IV	II	II	Voltmeter and multimeter Analog and Digital – Electrical Energy – Power	Board & Chalk	B.E.E by Anwani	Oral & written test
V	II	II	Watt – kwh – consumption and electrical power	Board & Chalk	B.E.E by Anwani	Oral & written test
VI	II	III	Electromagnetic Induction – Self Induction	Board & Chalk	B.E.E by Anwani	Oral & written test

VII	II	III	Mutual Induction – Electro magnets – Chokes	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
VIII	II	III	Transformers – Applications – Electric bell	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
IX	II	IV	Inverter – UPS – Generator and Motor – Different types of windings	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
X	II	IV	Flourescent Lamps – Street Lighting	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
XI	II	IV	Flood lighting – Electrical fans	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
XII	II	V	Wet Grinder – Mixer – stabilizer	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
XIII	II	V	Refrigerator – Electromagnetic waves	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
XIV	II	V	Applications – microwave oven – Television	Board & Chalk	B.E.E by M.L. Anwani	Oral & written test
XV	II	V	Wifi – modem	Board & chalk	B.E.E by M.L. Anwani	Oral & written test

Auxilium College (Autonomous)

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

Gandhi Nagar, Vellore - 632 006.

FACULTY RECORD

Name	:	Dr. N. V. Lakshmi
Department	:	Physics
Academic Year	:	2022-2023
Institutional Mail ID	:	lakshminv@auxiliumcollege.edu.in
Mobile No.	:	9486381183
ERP. ID	:	AUXMPH047

Institutional Responsibility	Department Responsibility
i) Member of Research and Publication committee ii) Member of Placement cell & Career Guidance.	i) I year Tutor ii) Incharge for Extension activities.

TIME TABLE

ODD SEMESTER

Hour / Day Order	1	2	3	4	5
I		BE	← I - Practical		→
II	BE				
III	POM				
IV			← II - Practical		→
V		POM			SBE (III year)
VI	SBE (III year)		V.E	POM	

BE → Basic Electronics, POM - Properties of Matter
SBE → Physics for Competitive Examinations.

EVEN SEMESTER

Hour / Day Order	1	2	3	4	5
I		MP	← I - Practical		→
II	Optics				Thermal
III	Thermal			Optics	
IV		MP	← II - Practical		→
V			optics	SSP	
VI		SSP	V.E	Thermal	

LESSON PLAN

Academic Year : 2022-2023
Class : III Year
Subject : Basic Electronics
Hours / Week : 2 hrs
Credits : 4

Semester : V
Class Code :
Subject Code : UCPHI20
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 - VI Characteristics - Zener diode - voltage regulator	Chalk & Board	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	Chalk & Board	Principles of Electronics - V.K. Mehta	oral & written test
3	2	I	Filters - Types of filter circuit - Action - π section filter - Diode voltage doubler - Multiplier	Chalk & Board	Principles of Electronics - V.K. Mehta	oral & written test
4	2	I	Clipping and clamping circuits	Chalk & Board	Principles of Electronics - V.K. Mehta	oral & written test
5	2	IV	Field effect transistor - JFET - Construction and working - output characteristics	Chalk & Board & PPT	Applied Electronics - A. Subramanyam	oral & written test
6	2	IV	Difference between FET and bipolar transistor - parameters of JFET	Chalk & Board & PPT	Applied Electronics - A. Subramanyam	oral & written test.

7	2	IV	MOSFET - Depletion and Enhancement - Description & working	PPT & Chalk & Board	Applied Electronics - A. Subramayam	oral & written test
8	2	IV	UJT - Construction - working - V-I characteristics - SCR - working - V-I characterstics.	PPT & Chalk & Board	Applied Electronics - A. Subramayam	oral & written test
9	2	V	Differential amplifier - gain - Common mode rejection ratio	PPT Chalk & Board	Integrated Electronics - V. Vijayendran	oral & written test
10	2	V	op-amp - characteristics of ideal op-amp - Expression	PPT Chalk & Board	Integrated Electronics - V. Vijayendran	oral & written test
11	2	V	Inverting and non-inverting amplifier	PPT Chalk & Board	Integrated Electronics - V. Vijayendran	oral & written test
12	2	V	Voltage follower - Summer - Differentiator - Integrator.	PPT Chalk & Board	Integrated Electronics - V. Vijayendran	oral & written test

LESSON PLAN

Academic Year : 2022 - 2023
Class : IV Year
Subject : Physics for Competitive Examinations
Hours / Week : 2 hrs
Credits : 2

Semester : V
Class Code :
Subject Code : U8PH520
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	2	I	Newton's Law - Conservative & Frictional Forces - Kepler's Law - Escape velocity - Gravitational Law & field	Chalk & Board	Mechanics - D.S. Mathur	oral & MCQ test
2	2	I	Motion under a central force - Moment of Interia - Product - Rigid body motion - Bernalli's - Elasticity.	Chalk & Board	C.L. Arora - Simplified Physics	oral & MCQ test
3	2	I	Waves & Simple Harmonic motion Lissajous figures - Damped & undamped - Resonance - Doppler effect - ultrasonics	Chalk & Board	Objective Physics - S.P. Kakani	oral & MCQ test
4	2	II	Power of lens - Fermat's Principle - resolving power - Interference - Diffraction - Polarization - optical active	Chalk & Board	Optics - Brijlal	oral & MCQ test
5	2	II	Types - Linear, Circular - elliptic Polarization - double refraction & optical rotation - Air wedge - Newton's ring	Chalk & Board	Optics - Brijlal	oral & MCQ test
6	2	III	Electric charge - Coulomb law - Gauss Law - Capacitors - Energy stored - Dielectric - Polarization - Ampere's Law	Chalk & Board	Electricity & Magnetism - R. Murugesan	oral & MCQ test

7	2	III	Faraday's Law – self inductance – Mutual inductance – A.C – Growth & Decay LR, RC, LCR.	Chalk & Board	Electricity & Magnetism – R. Muruganthan	oral & MCQ test
8	2	III	Magnetic Permeability & Susceptibility Dia, Para & Ferro, Measurement of susceptibility, Hysteresis loop.	Chalk & Board	Electricity & Magnetism – R. Muruganthan	oral & MCQ test
9	2	IV	X-ray Spectrum – Compton effect Compton wavelength – Photoelectric – Debroglies wavelength – wave	Chalk & Board	Modern Physics – R. Muruganthan	oral & MCQ test
10	2	IV	Uncertainty – Pauli's Principles – Mass defect – Binding energy – half life – Q value – Nuclear Fission & Fusion	Chalk & Board	Modern physics – R. Muruganthan	oral & MCQ test
11	2	V	Semiconductors – Rectifiers – Zener diode – Transistor as amplifier – α & β – relation – Feedback amplifier	Chalk & Board	Principles of Electronics – V. K. Mehta	oral & MCQ test
12	2	V	Oscillators – Amplitude & Frequency Modulation – OR, AND, NOR & NAND – OP – amps	Chalk & Board	Principles of Electronics – V. K. Mehta	oral & MCQ test

LESSON PLAN

Year : 2022 – 2023

Semester : I

Class Code :

Subject Code : UCPHA20

LESSON PLAN

Academic Year : 2022-2023
Class : I Year
Subject : Properties of Matter & Acoustics
Hours / Week : 3 hrs
Credits : 5

Semester : I
Class Code :
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
1	3	I	Basic idea of elastic moduli - Hooke's Law - Relation	Chalk & Board	Properties of matter - R. Murugeshan	oral & written test
2	3	I	Work done in Stretching and twisting a wire - Twisting cople on a cylinder.	Chalk & Board	Properties of matter - R. Murugeshan	oral & written test
3	3	I	Determination of Rigidity modulus and moment of interia using torsional pendulum.	Chalk & Board	Properties of matter - R. Murugeshan	oral & written test
4	3	I	η, σ, σ by Searle's method - compaind pendulum - radius of Gyration.	Chalk & Board	Properties of matter - R. Murugeshan	oral & written test
5	3	II	Definition and dimension of surface tension - Excess pressure - Problems.	Chalk & Board	Properties of matter - R. Murugeshan	oral & written test
6	3	III	Relation between curvatures - application to spherical & cylindrical drops - Jaegar's method.	Chalk & Board	Properties of matter - R. Murugeshan	oral & written test.

7	3	III	Viscosity - Streamline - turbulent flow - Reynold's number - Searle's viscometer.	PPT Chalk & Board	Properties of matter – R. Murugeshan	oral & written test
8	3	III	Meyer's Formula for rate of flow of gas - Poiseuille's formula - Oswald's viscometer.	PPT Chalk & Board	Properties of matter – R. Murugeshan	oral & written test
9	3	III	Stoke's Formula - determination - of co-efficient of viscosity - osmosis	PPT Chalk & Board	Properties of matter – R. Murugeshan	oral & written test
10	3	III	Berkeley and Hartley method - osmosis & vapour pressure - osmosis - h.P & F.P	PPT Chalk & Board	Properties of matter – R. Murugeshan	oral & written test
11	3	V	Low frequency / high intensity applications. High frequency / low intensity applications.	PPT	Properties of matter – R. Murugeshan	oral & written test
12	3	V	Different types of scans - Clinical applications - SONAR.	PPT	Properties of matter – R. Murugeshan	oral & written test
30/8/22			Revision.			

LESSON PLAN

Academic Year : 2022 - 2023
Class : III Year
Subject : Solid State Physics and Material Science
Hours / Week : 2 hrs
Credits :

Semester : VI
Class Code :
Subject Code : UEPHC20
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 PPT	Solid State Physics by Gupta kumar	oral & written test
2	2	I	Bravais Lattice - Miller Indices - Structure of crystals - simple cubic	Chalk & Board PPT	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 PPT	Solid State Physics by Gupta kumar	oral & written test
4	2	I	Reciprocal lattice - Properties of reciprocal lattice.	Chalk & Board	Solid State Physics by Nagarajan	oral & written test
5	2	I	Bragg's Law - Determination of crystal structure.	Chalk & Board	Solid State Physics by Nagarajan	oral & written test
6	2	I	The Laue method of x-ray diffraction - Powder crystal method	Chalk & Board	Solid State Physics by Nagarajan	oral & written test

7	2	III	Dielectrics - Dielectric Polariz-ability - Dielectric Constant	Chalk & Board	Solid State Physics by P. K. Palanisamy	oral & written test
8	2	III	Different types of electric Polarization - Frequency effect	Chalk & Board	Solid State Physics by P. K. Palanisamy	oral & written test
9	2	III	Temperature effect - Dielectric Loss - Local field or internal	Chalk & Board	Solid State Physics by P. K. Palanisamy	oral & written test
10	2	III	Clausius - Mosotti relation - determination of dielectric Constant	Chalk & Board	Solid State Physics by P. K. Palanisamy	oral & written test
11	2	V	Dielectric break down - types of insulating material - Meissner effect	Chalk & Board PPT	Solid State Physics by Gupta kumar	oral & written test
12	2	V	AC & DC Josephson effect - High temp Superconductors - Application	Chalk & Board PPT	Solid State Physics by Gupta kumar	oral & written test

LESSON PLAN

Academic Year : 2022 - 2023
Class : III Year
Subject : Microprocessor - 8085
Hours / Week : 2 hrs
Credits :

Semester : VI
Class Code :
Subject Code : UEPHE20
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	Binary and Hexa decimal system - Binary coded decimal and Basic logic gates	Chalk & Board	Microprocessor 8085 by V. Vijayendran	oral & written test
2	2	I	High impedance state — D flip flop & D Latches - Registers	Chalk & Board	Microprocessor 8085 by V. Vijayendran	oral & written test
3	2	I	Multiplexers & Demultiplexers - ROM & RAM - Microprocessor as CPU.	chalk & Board	Microprocessor 8085 by V. Vijayendran	oral & written test
4	2	I	Execution of an instruction — input & output unit - System & Bus structure.	Chalk & Board PPT	Microprocessor 8085 by V. Vijayendran	oral & written test
5	2	I	Block diagram of Architecture of 8085 - Internal Registers - Flag	PPT	Microprocessor 8085 by V. Vijayendran	oral & written test
6	2	IV	Memory interface basics — Demultiplexing data bus - control signals	PPT	Microprocessor 8085 by V. Vijayendran	oral & written test

7	2	IV	ROM / EPROM interface (2K x 8 EPROM, 4K x 8 ROM)	PPT	Microprocessor 8085 by V. Vijayendran	oral & written test
8	2	IV	RAM interface (2K x 8 RAM) (interface, 2K x 8 RAM decoders)	PPT	Microprocessor 8085 by V. Vijayendran	oral & written test
9	2	IV	out instruction and its timing diagram - IN instruction	PPT	Microprocessor 8085 by V. Vijayendran	oral & written test
10	2	IV	Memory mapped I/O - difference between memory mapped I/O & I/O mapped I/O	PPT	Microprocessor 8085 by V. Vijayendran	oral & written test
11	2	V	INTR - INTA - RST 5.5, RST 6.5, RST 7.5 and TRAP	PPT	Microprocessor 8085 by V. Vijayendran	oral & written test
12	2	V	Triggering levels - Priority levels Programmable Peripheral 8255	PPT	Microprocessor 8085 by V. Vijayendran	oral & written test

LESSON PLAN

Academic Year : 2022 - 2023
Class : I year
Subject : Thermal physics & Statistical Mechanics
Hours / Week :
Credits : 3hrs

Semester : II
Class Code :
Subject Code : UCPHB20
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 - Recti-linear flow of heat - forbe's method	Chalk & Board PPT	Thermal Physics by R. Murugesan	oral & written test
2	3	I	Thermal conductivity of Bad conductors - lee's Disc Method - Relation b/w Thermal & Electrical	Chalk & Board PPT	Thermal Physics by R. Murugesan	oral & written test
3	3	I	Stefan's Law - Derivation of Newton's Law of cooling from Stefan's Law - stefan's constant	Chalk & Board PPT	Thermal physics by R. Murugesan	oral & written test
4	3	I	Planck's Quantum theory of radiation - Deduction of Wien's Law and Rayleigh Jeans law	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test
5	3	I	Solar constant - Temperature of Sun - Solar spectrum	Chalk & Board	Heat & Thermodynamics by Brijlal	oral & written test
6	3	IV	Introduction - Joule Thomson effect - Joule kelvin effect	Chalk & Board	Thermal Physics by R. Murugesan	oral & written test

7	3	IV	Kammerlingonne's method - Liquefaction of Hydrogen & Helium	Chalk & Board	Heat & thermodynamics by Brijlal	oral & written test
8	3	IV	Helium I & II - lamda point Adiabatic demagnetization	Chalk & Board PPT	Heat & thermodynamics by Brijlal	oral & written test
9	3	IV	Practical Applications of low temperatures - Refrigerators & Air condition Machines	Chalk & Board	Thermal Physics by R. Murugeshan	oral & written test
10	3	V	Definition of Phase space - Micro & Macrostates	Chalk & Board	Thermal by Roy	oral & written test
11	3	V	Different types of Ensembles - probability - problems	Chalk & Board	Thermal by Roy	oral & written test
12	3	V	Expression for Maxwell Boltzmann Statistics	Chalk & Board PPT	Thermal by Roy	oral & written test

LESSON PLAN

Academic Year : 2022 - 2023
Class : II Year
Subject : Optics
Hours / Week : 3 hrs
Credits :

Semester : IV
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
1	3	I	Lens and its types - optic center of lens - Principal foci Principal points - Thick lens	Chalk & Board	Optics by R. Murugeshan	oral & written test
2	3	I	Power of thick lens - Defects in lenses - various defects	Chalk & Board	Optics by R. Murugeshan	oral & written test
3	3	I	Methods of minimizing Spherical aberration - Contact & out of contact method	PPT	Optics by R. Murugeshan	oral & written test
4	3	I	conditions for achromatic aberration of two thin lenses in contact & out of contact	PPT	Optics by R. Murugeshan	oral & written test
5	3	I	Basic ideas of eyepiece - Ramsden's & Huygen's eyepiece	PPT	Optics by R. Murugeshan	oral & written test
6	3	III	Interference - Condition for Interference - theory - Thin films	Chalk & Board	Optics by R. Murugeshan	oral & written test

7	3	III	Air wedge - Determination of diameter of thin wire	Chalk & Board	Optics by R. Murugeshan	oral & written test
8	3	III	Michelson's interferometer - theory - Application	PPT	Optics by R. Murugeshan	oral & written test
9	3	III	Jamin's and Rayleigh's interferometer - Fabry - Perot	PPT	Optics by R. Murugeshan	oral & written test
10	3	III	Holography - Principle - Construction and Application	Chalk & Board	Optics by R. Murugeshan	oral & written test
11	3	V	Polarisation - Double refraction by Huygen's in uniaxial crystals	Chalk & Board	Optics by R. Murugeshan	oral & written test
12	3	V	Nicol prism - Quarter and half wave plates - plane - circularly - elliptically polarized light	PPT	Optics by R. Murugeshan	oral & written test

Auxilium College (Autonomous)

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

Gandhi Nagar, Vellore - 632 006.

FACULTY RECORD

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Department : PHYSICS

Academic Year : 2022 - 2023

Institutional Mail ID : rajalakshmiphy@auxiliumcollege.edu.in

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Institutional Responsibility	Department Responsibility
Extension Activity	III, B.Sc, Physics Tutor Association Incharge

TIME TABLE

ODD SEMESTER

Hour / Day Order	1	2	3	4	5
I	III Phy. Atomic physic		II phy. mathematical physics		III NME
II	II phy. Mathematical physics		III PHYSICS Main practical		
III		III NME	III phy. main practical		
IV			III phy. Atomic phy.		III NME
V			II phy Mathematical phy.		
VI				II phy Mathematical phy.	

EVEN SEMESTER

Hour / ay Order	1	2	3	4	5
I	II M.Sc phy NP		III phy E&M		III NME
II			III Physics Main practical		
III		III NME	III Physics Main practical		
IV			II Physics Main practical		II NME
V	II M.Sc physics NP				III phy E&M
VI		II phy EVS	VE I B.Sc PSY.		

Academic Year : 2022 - 2023
Class : III
Subject : Atomic physics
Hours / Week : 2
Credits :

Semester : V
Class Code :
Subject Code : UCPHH120
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	1	overview of positive ray analysis and its properties.	chalk and board	Modern physics by Murugesan Atomic physics by Brijlal subramanyam	Oral test
II	2	1	Determine the value of e/m using Thomson's parabola method,	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal Subramanyam	Oral test
III	2	1	Aston's mass spectrograph	chalk & board	Modern physics by Murugesan Atomic physics by Brijlal subramanyam	Oral test
IV	2	1	Dempster's mass spectrograph	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal Subramanyam	Oral test
V	2	1	Critical potentials (Ionization and excitation potential	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal Subramanyam	Oral test
VI	2	1	Experimental determination of critical Potentials - Franck and Hertz experiment, Davis and Goucher's experiment.	Chalk & board	Modern Physics by Murugesan Atomic physics by Brijlal Subramanyam	Oral test

VII	2	4	Overview of spectral terms and notations, selection rules, Intensity rule and interval rule	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal & Subramanyam	Oral test
VIII	2	4	Fine structure of Sodium D lines, spectrum of Helium	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal & Subramanyam	Oral test
IX	2	4	Zeeman effect (experimental arrangement for the normal zeeman effect	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal Subramanyam	Oral test
X	2	4	Larmor's theorem	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal Subramanyam	Oral test
XI	2	4	Debye's explanation of normal zeeman effect - Anamalous zeeman effect.	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal Subramanyam	Oral test
XII	2	4	Theoretical explanation - lande's g factor and explanation of splitting of D_1 & D_2 lines of Na - Coalescence of spectral lines.	Chalk & board	Modern physics by Murugesan Atomic physics by Brijlal Subramanyam	Oral test

Academic Year : 2022 - 2022
Class : II BSc, physics
Subject : Mathematical methods & 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	4	I	Gradient of a scalar field - physical interpretation - line, Surface, volume integrals	Chalk & board	Mathematical Physics by H.K doss Sathyaprakash	Oral test
II	4	I	Divergence and curl of vector function and its physical significance Gauss divergence theorem	Chalk and board	Mathematical Physics by H.K. doss, Sathyaprakash	oral test
III	4	I	Applications of vectors to hydro dynamics - heat flow in solids - gravitation and electromagnetic field	chalk and board	Mathematical physics by H.K doss & Sathyaprakash	Oral test
IV	4	I	Introduction to matrices - Review of algebraic operations of matrices - Properties of matrix multiplication	Chalk and board	mathematical Physics by H.K.doss, Sathyaprakash	Oral test
V	4	I	Eigen value - eigen vectors - characteristic equation of matrix - caley Hamilton theorem - diagonalisation of matrices	Chalk and board	mathematical physics by H.K.doss, Sathyaprakash	Oral test
VI	4	II	Beta function - Symmetry property of beta function - Evaluation of beta function, Gamma function	Chalk and board	Mathematical physics by H.K.doss, Sathyaprakash	Oral test

VII	4	II	Evaluation of Gramma function - legendre's differential equation & - legendre's function	Chalk and board	Mathematical physics by H.K. Doss, Sathya Prakash	Oral test
VIII	4	II	Generating function of legendre's polynomial	Chalk and board	Mathematical physics by H.K Doss, Sathya Prakash	oral test
IX	4	II	orthogonal Properties of legendre's polynomials - Recurrence formulae	Chalk and board	Mathematical physics by H.K. Doss, Sathya Prakash	oral test
X	4	II	Recurrence formulae - Bessel's differential equation	Chalk and board	Mathematical physics by H.K. Doss, Sathya Prakash	oral test
XI	4	III	Measures of Skewness - Karl pearson's Co-efficient of Skewness Bowley's Co-efficient of Skewness	Chalk and board	Mathematical physics by H.K. Doss, Sathya Prakash	oral test
XII	4	III	Distribution models - Binomial, poisson and normal distribution	Chalk and board	Mathematical physics by H.K. Doss, Sathya prakash	oral test

Academic Year : 2022 - 2023
Class : III
Subject : NME - FUNDAMENTALS OF PHYSICS
Hours / Week : 3
Credits :

Semester : V
Class Code :
Subject Code : UGTPH520
Total Hours :
Total Marks :

	Teaching Methodology	Learning Resources	Methods of Evaluation

LESSON PLAN

Academic Year : 2022 - 2023
Class : III
Subject : NME - FUNDAMENTALS OF PHYSICS
Hours / Week : 3
Credits :

Semester : V
Class Code :
Subject Code : UGPH520
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	1	position and displacement - velocity - Speed - Newton's Laws of motion -	chalk and board	Properties of Matter by R. Murugesan	Oral test
II	3	1	Applications of Newton's third Law - Fundamental forces in nature - Apparent weight of a man in lift.	chalk and board	Properties of matter by R. Murugesan	Oral test
III	3	1	work, power and energy - applications of centripetal and centrifugal forces.	chalk and board	properties of Matter by R. Murugesan	Oral test
IV	3	2	Heat - measures of heat (temp) Specific heat - heat of fusion - Heat of Vaporization	chalk and board	Heat & Thermo dynamics by Brijilal & Subramanyam	Oral test
V	3	2	Transmission of heat - conduction convection, Radiation	chalk and board	Heat and thermo dynamics by Brijilal & Subramanyam	Oral test
VI	3	2	peltier effect, Super conductors, and its applications	chalk and board	Heat & thermody namics by Brijilal & Subramanyam	Oral test

VII	3	3	sound - properties of sound - ultrasonics - different types of scan - medical applications of ultrasonics.	chalk and board	Sound & light by Brijilal and Subramanyam	oral test
VIII	3	3	Clinical applications of different type of scans (obstetrics, early pregnancy, kidney and liver) - Acoustics of	chalk and board	Sound & light by Brijilal and Subramanyam	oral test
IX	3	3	Buildings - Reverberation - Acoustic aspects of hall & auditorium light propagation of light - diff types of lens Human eye - defects of vision Laser	chalk and board	Sound & light by Brijilal & Subramanyam	oral test
X	3	4	its applications Atom - nucleus - atomic & mass number nuclear fission - chain reaction. uncontrolled chain reaction. : Application	Chalk and board	modern physics by R. murugesan	oral test
XI	3	4	atom bomb, controlled chain reaction application; nuclear reactor, Nuclear fusion - Application - Hydrogen bomb	chalk and board	modern physics by R. murugesan	oral test
XII	3	4	X-rays - production, properties and medical application of X-rays	chalk and board	Modern physics by R. murugesan	oral test
XIII	3	5	Gravitation - Newton's law of gravitation - satellite motion - escape velocity - weightlessness in a satellite.	Chalk and board	Astrophysics by Krishnamoorthy	oral test
XIV	3	5	Geocentric theory - Heliocentric theory Kepler's laws - The solar system. individual planets - comets, asteroids	chalk and board	The Great Universe by Sadhidharan	oral test
XV	3	5	and other constituents of the solar system - Formation of stars.	Chalk and board	The great universe by sadhidharan	oral test

LESSON PLAN

Academic Year : 2022 - 2023
Class : II M.Sc physics
Subject : Nuclear physics
Hours / Week : 2 hr
Credits :

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

	No. of	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
					Atomic & Nuclear	oral

LESSON PLAN

Academic Year : 2022 - 2023
Class : II M.Sc physics
Subject : Nuclear physics
Hours / Week : 2 hr
Credits :

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

roposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	2	Types of Reactions and conservation laws.	Chalk and board	Atomic & Nuclear physics by S.N. Ghoshal	Oral test
II	2	2	Energetic of nuclear Reactions - Dynamics of Nuclear reactions - Q-value equation.	Chalk and board	Pandya and Yadav by Nuclear physics	Oral test
III	2	2	Scattering and Reaction cross section, compound Nucleus Reactions.	Chalk and board	pandya and Yadav by Nuclear physis	Oral test
IV	2	2	Scattering matrix - Reciprocity theorem, Breit-wigner one level formula	Chalk and board	pandya and Yadav by Nuclear physics	Oral test
V	2	2	Resonance Scattering, continuum theory, optical model.	Chalk and board	pandya and Yadav by Nuclear physics	Oral test
VI	2	4	Fermi Beta decay - Fermi theory of beta decay - Fermi-Curie Plot.	Chalk and board	Nuclear physics by S.N. Ghoshal	Oral test

VII	2	4	Fermi and Gamow-Teller selection rules - allowed and Forbidden decays - decay rates	chalk and board	Nuclear physics by S.N. Ghoshal	Oral test
VIII	2	4	Theory of neutrino - Helicity of neutrino, theory of e⁻ capture	chalk and board	Nuclear physics by S.N. Ghoshal	Oral test
IX	2	4	Non conservation of parity - Gamma decay -	chalk and board	Nuclear physics by S.N. Ghoshal	Oral test
X	2	4	multiple transitions in nuclei - Internal conversion - nuclear isomerism.	chalk and board	Nuclear physics by S.N. Ghoshal	Oral test
XI	2	5	classification of hadrons - SU(2) and SU(3) multiples, Quark model, Gell-mann-Okubo mass	chalk and board	Nuclear physics by D.C Tayal	Oral test
XII	2	5	formula for octet and decupled hadrons. Charm, bottom and top quarks.	chalk and board.	Nuclear physics by D.C Tayal.	Oral test

LESSON PLAN

Academic Year : 2022 – 2023
Class : III, B.Sc, Physics
Subject : Quantum Physics Mechanics
Hours / Week : 2
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	2	De Broglie wavelength - Phase velocity and Group velocity of De Broglie waves	chalk and board	Modern Physics by Murugesan	oral test
II	2	2	Relationship between phase velocity and Group velocity - Experimental study of matter waves - Davisson and Germer's experiment	Chalk and board	Modern physics by Murugesan	oral test
III	2	2	G. P. Thomson's experiment, wave length of motion of particles like electron - electron microscope.	chalk and board	Modern physics by Murugesan	oral test
IV	2	2	Heisenberg's uncertainty principle. γ-ray microscope. Application - Diffraction of electron beam by single slit and non existence of e^- in inside the Nucleus, Explanation of Bohr Radias - min energy of simple Harmonic oscillator	Chalk and board	Modern physics by Murugesan	oral test
V	2	2		Chalk and board	Modern physics by Murugesan	oral test
VI	2	3	Failures of classical Mechanics wave function - Physical interpretation of wave function - postulates of Quantum mechanics.	chalk and board	Quantum mechanics by Gupta kumar	oral test

VII	2	3	operators for physical Quantities.	chalk and board	Quantum mechanics by Gupta Kumar	Oral test
VIII	2	3	Eigen value equation - Eigen values and Eigen function	chalk and board	Quantum mechanics by Gupta Kumar	Oral test
IX	2	3	Schrodinger's equation - Time dependent and time independent equation.	chalk and board.	Quantum mechanics by Gupta Kumar	Oral test
X	2	3	Expectation values - Expectation values of observables, Ehrenfest's theorem.	chalk and board	Quantum mechanics by Gupta Kumar	Oral test
XI	2	5	Schroedinger equation in Spherical polar coordinates, Reduction of two body problems in to one body	chalk and board	Quantum mechanics by Gupta Kumar	Oral test
XII	2	5	problem, Hydrogen atom - wave eqns for the hydrogen atom - seperation of variables - Azimuthal, polar and Radial wave equations.	chalk and board.	Quantum mechanics by Gupta Kumar Sharma	Oral test

LESSON PLAN

Academic Year : 2022 - 2023
Class : III Year NME
Subject : NME - Fundamentals of physics
Hours / Week : 3
Credits :

Semester : VI
Class Code :
Subject Code : UC1PHN620
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	1	position and displacement - velocity - Speed - Newton's laws of motion	chalk and board	properties of matter by R. Murugesan	Oral test
II	3	1	Applications of Newton's third laws - Fundamental forces in nature - Apparent weight of a man in lift	chalk and board	properties of matter by R. murugesan	Oral test
III	3	1	work, power and energy - applications of centripetal and centrifugal forces.	Chalk and board	properties of matter by Murugesan	Oral test
IV	3	2	Heat - measures of heat (temp) specific heat - heat of fusion - Heat of vaporization	chalk and board	Heat and thermodynamics by Brijilal & Subramanyam	Oral test
V	3	2	Transmission of heat - conduction, convection, Radiation.	Chalk and board	Heat & thermodynamics by Brijilal & Subramanyam	Oral test
VI	3	2	peltier effect, super conductors, and its applications	chalk and board	Heat and thermodynamics by Brijilal & Subramanyam	Oral test

VII	3	3	Sound - properties of sound - ultrasonics - Different types of scans - medical applications of ultrasonics	chalk and board	Sound & light by Brijilal & Subramanyam	oral test
VIII	3	3	clinical applications of different types of scans (obstetrics, early pregnancy, kidney and liver) - Acoustics of	chalk and board	Sound & light by Brijilal & Subramanyam	oral test
IX	3	3	Buildings - Reverberation - Acoustic aspects of hall and auditorium light propagation of light - diff. types of lenses	chalk and board	Sound & light by Brijilal & Subramanyam	oral test
X	3	4	Human eye - defects of vision laser and its application, Atom - Nucleus - atomic & mass no - Nuclear fission - chain reaction - uncontrolled	chalk and board	Modern physics by Murugesan	oral test
XI	3	4	chain reaction - Application - atom bomb, controlled chain reaction Application : Nuclear reactor, Nuclear	chalk and board	Modern physics by Murugesan	oral test
XII	3	4	fusion, application - Hydrogen bomb. X-rays - production, properties and medical applications of X-rays Gravitation - Newton's law of gravitation	chalk and board	Modern physics by Murugesan	oral test
XIII	3	5	Satellite motion, escape velocity, weightlessness in a satellite, geocentric theory, heliocentric theory, Keplers laws	chalk and board	Astrophysics by Krishnamoorthy	oral test
XIV	3	5	The solar system, Individual planets Comets, Asteroids and other	chalk and board	The great universe by Sadhidharan	oral test
XV	3	5	constituents of Solar system Formation of stars	chalk and board	The great universe by Sadhidharan	oral test

LESSON PLAN

Academic Year : 2022 - 2023
Class : II, B.Sc. Physics
Subject : EVS
Hours / Week : 1
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	1	1	Definition of Environment - Scope and importance.	chalk and board	EVS by Isabella & Hemanalini	Oral test
II	1	1	Components and segments of environment.	chalk and board	EVS by Isabella & Hema Nalini	Oral test
III	1	1	multidisciplinary nature of Environmental studies.	chalk and board	EVS by Isabella & Hemanalini	Oral test
IV	1	1	Natural Resources : water, land, wind	chalk and board	EVS by Isabella & Hemanalini	Oral test
V	1	1	Energy, Forest and Mineral resources.	chalk and board	EVS by Isabella & Hema Nalini	Oral test
VI	1	2	Ecosystem - structure and fns of Ecosystem	Chalk and board	Evs by Isabella & Hemanalini	Oral test

VII	1	II	Food chain and food web - Ecological pyramids.	chalk and board	Evs by Isabella & Hemanalini	Oral test
VIII	1	II	Types of Ecosystems - Lake ecosystem, pond Ecosystem	Chalk and board	Evs by Isabella & Hemanalini	Oral test
IX	1	II	Forest Ecosystem, Grassland Ecosystem, Desert Ecosystem	chalk and board	Evs by Isabella & Hemanalini	Oral test
X	1	II	Ocean Ecosystem - Energy Ecosystem Ecological succession	chalk and board.	Evs by Isabella & Hemanalini	Oral test
XI	1	III	Biodiversity : General terms related to biodiversity	chalk and board	Evs by Isabella & Hemanalini	Oral test
XII	1	III	Types of Diversity, India as a mega biodiversity Zone.	chalk and board.	Evs by Isabella & Hemanalini	Oral test

8/2/25

Auxilium College (Autonomous)

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Gandhi Nagar, Vellore - 632 006.

FACULTY RECORD

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Department : PHYSICS

Academic Year : 2022 – 2023

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ERP. ID : AUXMPH340

Institutional Responsibility	Department Responsibility
Certificate Course incharge	II B.Sc Physics Tutor INNOVATION INSIDE incharge

TIME TABLE

ODD SEMESTER

Hour / Day Order	1	2	3	4	5
I	II Physics classical mechanics		III Physics Digital Electronics		
II			← III	Physics PRACTICAL	→
III		II Physics classical Mechanics	← III	Physics PRACTICAL	→
IV			← II	Physics PRACTICAL	→
V		III Physics Digital Electronics			
VI	II Physics classical Mechanics		I Psychology Value Education		

EVEN SEMESTER

Hour / Day Order	1	2	3	4	5
I					II M.Sc Nuclear Physics
II	III B.Sc Microprocessor		II M.Sc Nuclear Physics		
III		←	II M.Sc Practical		→
IV		←	II M.Sc Practical		→
V		I M.Sc Mathematical physics		II M.Sc Nuclear Physics	
VI	I M.Sc Mathematical Physics		II M.Sc Chemistry V.E & Zoology		III B.Sc Microprocessor

LESSON PLAN

LESSON PLAN

Academic Year : 2022-2023
Class : III B.Sc PHYSICS
Subject : DIGITAL ELECTRONICS AND COMMUNICATION
Hours / Week : 2hrs/week
Credits : 5

Semester : V
Class Code :
Subject Code : UEPHA20
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 system and their conversion, Boolean operations and rules.	Chalk & board	Digital Electronics by V. Vijayandran	Class Test
II	2	I	Simplification of logic expressions, DeMorgan's theorem and Basic logic gates (AND, OR, NOT)	Chalk & board	Digital Electronics by V. Vijayandran	Assignment
III	2	I	Logic Gates : NAND, NOR, EX-OR, EX-NOR NAND and NOR as Universal gates	Chalk & board	Digital Electronics by V. Vijayandran	Class Test
IV	2	I	Karnaugh Map : Sum of Products, Pair, Quad and octet.	Chalk & board	Digital Electronics by V. Vijayandran	Class Test & Assignment
V	2	II	Arithmetic circuits – Half adder, Full Adder, Half subtractor.	Chalk & board	Digital Electronics by P. Raja	Class Test
VI	2	II	Parallel binary adders, BCD adder and Multiplexers.	Chalk & board	Digital Electronics by P. Raja	Class Test

VII	2	II	Demultiplexers with examples, Digital logic family : RTL NOR gate	Chalk & board	Digital Electronics by P. Raja	Class Test
VIII	2	II	DTL NAND gate, TTL NAND gate and characteristics of TTL family.	Chalk & board	Digital Electronics by P. Raja	Class Test
IX	2	III	Flip flop : RS flip flop, clocked RS flip flop, Preset and clear and Race around condition	Chalk & board	Digital Electronics by V. Vijayendran	Assignment
X	2	III	JK Master Slave flip flop and D flip flop	Chalk & board	Digital Electronics by V. Vijayendran	Class Test
XI	2	III	T flip flop, asynchronous counter and its operation.	Chalk & board	Digital Electronics by V. Vijayendran	Class Test
XII	2	III	3-bit binary Counter and Mod 7 Counter.	Chalk & board	Digital Electronics by V. Vijayendran	Class Test

LESSON PLAN

III

LESSON PLAN

Academic Year : 2022-2023
Class : II B.Sc. PHYSICS
Subject : MATHEMATICAL METHODS AND CLASSICAL MECHANICS
Hours / Week : 3
Credits : 5

Semester : III
Class Code :
Subject Code : UCPHD20
Total Hours :
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	IV	Mechanics for a system of particle, Constraints and D'Alembertz Principle.	Chalk & board	Classical Mechanics - Gupta & Sharma	Class Test
II	3	IV	Lagrange's equation from D'Alembertz principle, Lagrangian equation for dissipative force	Chalk & board	Classical Mechanics - Gupta & sharma	class Test
III	3	IV	Application of Lagrange equation : Spherical and simple pendulum.	Chalk & board	Classical Mechanics - Gupta & sharma	Assignment
IV	3	IV	Compound pendulum and Central force, equation of motion of first integrals.	Chalk & board	Classical Mechanics - Gupta & Sharma	class Test
V	3	V	Phase-space, Hamilton's equation and Physical significance of Hamiltonian function	Chalk & board	classical Mechanics - Gupta & Sharma	Assignment
VI	3	V	Applications of Hamiltonian equations : Simple, Compound pendulum and Poisson's bracket	Chalk & board	Classical Mechanics - Gupta & Sharma	class Test

VII	3	V	Properties of Poisson's bracket, Lagrange bracket and relation between poisson & lagrange bracket	chalk & board	classical Mechanics - Gupta & sharma	Class Test
VIII	3	V	Application of Lagrangian and Hamiltonian for a charged particle	Chalk & board	classical Mechanics - Gupta & sharma	Class Test
IX	3	III	Introduction to statistics and Measure of Central tendency	Chalk & board	Comprehensive statistical methods - P.N. Arora	Assignment
X	3	III	Measure of arithmetic mean, median and mode.	Chalk & board	Comprehensive statistical methods - P.N. Arora	Assignment
XI	3	III	Measure of dispersion and range	Chalk & board	Comprehensive statistical methods - P.N. Arora	Class Test
XII	3	III	Quartile, mean and standard deviation.	Chalk & board	Comprehensive statistical methods - P.N. Arora	Class Test

30/8/22

LESSON PLAN

Academic Year : 2022 - 2023
Class : I M.Sc Physics
Subject : Mathematical Physics - II
Hours / Week : 2 hrs
Credits : 5

Semester : II
Class Code :
Subject Code : PCPHD30
Total Hours :
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	2	Tensors, Transition of Coordinate and Einstein's summation Convention	Chalk & board	Mathematical Physics - Sathyaprakash	Class Test
II	2	2	Contravariant & co-variant Tensor, Rank and Higher ranks of Tensor	Chalk & board	Mathematical Physics - Sathyaprakash	Class Test
III	2	2	Kronecker delta and Levi Civita symbol and Algebraic operations	Chalk & board	MP - Sathya Prakash	Class Test
IV	2	2	Symmetric and anti-symmetric tensors	Chalk & board	MP - Sathya Prakash	Class Test
V	2	2	Christoffel's 3-index and covariant derivative of a tensor	Chalk & board	MP - Sathya Prakash	Assignment
VI	2	3	Laplace Transform and Inverse Laplace transforms.	Chalk & board	MP - B.D. Gupta	Class Test

VII	2	3	Linear differential Equation and Evaluation of Integrals	Chalk & board	MP- B.D. Gupta	Class Test
VIII	2	3	Fourier Transforms and Fourier sine and Cosine Transform	Chalk & board	MP- B.D. Gupta	Assignment
IX	2	3	Convolution Theorem	Chalk & board	MP- B.D. Gupta	Assignment
X	2	3	Simple applications of Transforms.	Chalk & board	MP- B.D. Gupta	Class Test
XI	2	5	Groups, subgroup and conjugate classes	Chalk & board	MP — H.K. Dass	Class Test
XII	2	5	Homomorphism and isomorphism between groups	Chalk & board	MP - H.K. Dass	Class Test
XIII	2	5	point groups and reducible & irreducible representations.	Chalk & board	MP- H.K. Dass	Assignment
XIV	2	5	Schur's lemma and Great Orthogonality theorem	Chalk & board	MP- H.K. Dass	Assignment
XV	2	5	Two dimensional (R+2) & (R+3)	Chalk & board	MP- H.K. Dass	Class Test

LESSON PLAN

LESSON PLAN

Academic Year : 2022–2023
Class : II M.Sc Physics
Subject : Nuclear and Particle Physics
Hours / Week : 3
Credits : 4

Semester : IV
Class Code :
Subject Code : PCPHM20
Total Hours :
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	1	Nuclear force and Ground state of Deuteron	Chalk & board	Nuclear Physics – M.L. Pandya	Class Test
II	3	1	Meson theory and Yukawa potential	Chalk & board	NP – M.L. Pandya	Class Test
III	3	1	Magnetic and Quadrupole moment of Deuteron	Chalk & board	NP – M.L. Pandya	Class Test
IV	3	1	Scattering and Effective range theory, Spin dependence.	Chalk & board	NP – D.C. Tayal	Assignment
V	3	1	Charge Independence and isospin formalism	Chalk & board	NP – M.L. Pandya	Assignment
VI	3	3	Liquid drop model and Nuclear stability	Chalk & board	NP – M.L. Pandya	Class Test

VII	3	3	Bohr wheeler theory of fission	PPT	NP- M.L. Pandya	Class Test
VIII	3	3	Shell model and spin-Orbit Coupling	PPT	NP- M.L. Pandya	Assignment
IX	3	3	Angular momenta and parities of Nucleas ground state	PPT	NP- M.L. Pandya	Assignment
X	3	3	Collective model of Bohr and Mottelson	PPT	NP- M.L. Pandya	Class Test
XI	3	5	Types of interaction and Hadrons, leptons	PPT	NP- M.L. Pandya	Class Test
XII	3	5	Quantum numbers and Conservation laws.	PPT	NP- S.N. Ghoshal	Assignment
XII	3	5	Elementary ideas of CP & CPT	PPT	NP- S.N. Ghoshal	Assignment

LESSON PLAN

Academic Year : 2022 – 2023
Class : III B.Sc Physics
Subject : Microprocessor 8085
Hours / Week : 2
Credits : 5

Semester : VI
Class Code :
Subject Code : UEPHE20
Total Hours :
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	2	Machine Language, Assembly Language and Programmer's model of 8085	Chalk & board	Microprocessor 8085 – Vijayendran	Class Test
II	2	2	Data Transfer Instructions – I	Chalk & board	MP 8085 – Vijayendran	Class Test
III	2	2	Data Transfer Instructions – II	Chalk & board	MP 8085 – Vijayendran	Class Test
IV	2	2	Stack and Stack related instructions	Chalk & board	MP 8085 – Vijayendran	Class Test
V	2	2	Machine Control and 8085 addressing mode.	Chalk & board	MP 8085 – Vijayendran	Class Test
VI	2	3	Memory Read Cycle.	Chalk & board	MP 8085 – Vijayendran	Assignment

VII	2	3	Memory Write cycle	Chalk & board	Microprocessor 8085 – Vijayendran	Class Test
VIII	2	3	Wait and Halt state	Chalk & board	MP 8085 – Vijayendran	Assignment
IX	2	3	Timing diagrams for MOV, MVI, LXI, STA and DCX	Chalk & board	MP 8085 – Vijayendran	Class Test
X	2	3	Delay Calculations.	Chalk & board	MP-8085 – Vijayendran	Class Test
XI	2	5	INTR and INTA and RST	Chalk & board	MP 8085 – Vijayendran	Assignment
XII	2	5	Triggering and priority levels.	Chalk & board	MP 8085 – Vijayendran	Class Test
XIII	2	5	Programs for addition and subtraction	Chalk & board	MP 8085 – Vijayendran	Class Test

22/2/23

Auxilium College (Autonomous)

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Gandhi Nagar, Vellore - 632 006.

FACULTY RECORD

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Department : PHYSICS

Academic Year : 2022 - 2023

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ERP. ID :

Institutional Responsibility	Department Responsibility
	III B.Sc physics TUTOR INNOVATION INSIDE INCHARGE

TIME TABLE

ODD SEMESTER

Hour / Day Order	1	2	3	4	5
I				Electricity & Magnetism III year	
II		SBE I year	Main	practicals	III year
III	Atomic physics III year		Main	practicals	II year
IV		Electricity & Magnetism III year			
V	Atomic physics III year		Electricity & Magnetism III year		SBE I year
VI			Value Education III year (psy)		Atomic physics III year

EVEN SEMESTER

Hour / Day Order	1	2	3	4	5
I			EVS II year	SBE III year	
II		SBE I year	Main practicals	III year	
III			Main practicals	III year	
IV	EMT (PG)			QM III year	
V	Electromagnetic Quantum III year		SBE III year		SBE I year
VI	Quantum Mechanics III year		Value Education		EMT (PG)

LESSON PLAN

Academic Year : 2022 - 2023
Class : III B.Sc PHYSICS
Subject : ATOMIC PHYSICS AND SPECTROSCOPY
Hours / Week : 3hrs / Week
Credits : 5

Semester : V
Class Code :
Subject Code : UCPHP20
Total Hours :
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	II	Photo Electric emission and laws Determination of e/m using Lenard's Experiment Richardson & Compton Experiment	Chalk & Board	Modern physics Murugesan. R	Class test
II	3	II	Einstein's photo Electric Equation, Experimental Verification of Einstein's photo Electric equation by Millikan's Experiment	Chalk & Board	Modern physics R. Murugesan	Class test
III	3	II	photo Electric Cell, photo Emissive Cell, Voltaic Cell, photo Conductive Cell Application of photo Electric Cell, photo multiplier tube.	Chalk & Board	Modern physics R. Murugesan	Class test
IV	3	III	Vector Model - Spatial Quantization, Electron Spin, Quantum Numbers of Electrons	Chalk & Board	Modern physics R. Murugesan	Assignment
V	3	III	Coupling Scheme L-S and j-j couplings Pauli's Exclusion principle and Electronic Configuration of Elements & periodic classification	Chalk & Board	Modern physics R. Murugesan	Assignment
VI	3	III	Magnetic dipole moment of Electron due to Orbital motion	Chalk & Board	Modern physics R. Murugesan	Class test

VII	3	III	Magnetic dipole moment of electron due to Spin motion, Bohr Magneton	Chalk + Board	Modern physics R. Murugesan	Class test
VIII	3	III	Stern and Gerlach Experiment - Spin orbit Coupling	Chalk + Board	Modern physics R. Murugesan	Class test
IX	3	IV	Spectroscopy Electromagnetic Spectrum laws of absorption Spectrum, UV-rays	Chalk + Board	Modern physics R. Murugesan	Assignment
X	3	V	Source of UV detection, IR rays source - Detection, Double Beam Spectro - photometer	Chalk + Board	Modern physics R. Murugesan	Class test
XI	3	V	Scattering of light, Rayleigh's scattering Raman Effect, Experimental study	Chalk + Board	Modern physics R. Murugesan	Assignment
XII	3	V	Quantum theory of Raman Effect Comparison of Raman + IR Spectra	Chalk + Board	Modern physics R. Murugesan	Class test

5/12/22

LESSON PLAN

Academic Year : 2022 - 2023
Class : III
Subject : ELECTRICITY AND MAGNETISM
Hours / Week : 3 hrs / WEEK
Credits : 5

Semester : V
Class Code :
Subject Code : VCPH420
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 - Relativity of Permittivity, Gauss law	Chalk & Board	Electricity & Magnetism R. Murugesan	Class test
II	3	I	Differential form of Gauss law, Electric field due to uniformly charged sphere, Electric potential	Chalk & Board	Electricity & Magnetism R. Murugesan	Class test
III	3	I	Electric potential as line integral of Electric field, Relation b/w Electric field & potential, Potential Uniformly charged sphere	Chalk & Board	Electricity & Magnetism R. Murugesan	Class test
IV	3	I	Electric dipole, Electric potential and Electric field dipole due to Laplace & poisson's equation.	Chalk & Board	Electricity & Magnetism R. Murugesan	Class test
V	3	IV	Biot and Savart's law, Magnetic induction due to a Circular Coil Carrying Current & Force on a Current Carrying	Chalk & Board	Electricity & Magnetism R. Murugesan	Class test
VI	3	IV	Moving Coil Ballistic Galvanometer, Damping Correction, Conditions for dead beat Ballistic.	Chalk & Board	Electricity & Magnetism R. Murugesan	Class test

VII	3	IV	Current and Voltage Sensitiveness of Moving Coil Galvanometer, Absolute Capacity of a Capacitor	Chalk + Board	Electricity & Magnetism R. Murugesan	Class test
VIII	3	IV	Comparison, Self inductance, mutual along solenoid, Co-axial Solenoids, Eddy Current and its uses	Chalk + Board	Electricity & Magnetism R. Murugesan	Class test
IX	3	V	Magnetic induction, Magnetization, Magnetic Susceptibility, permeability, Relation b/w B, H, and M	Chalk + Board	Electricity & Magnetism R. Murugesan	Assignment
X	3	V	Hysteresis curve, Experimental M-H curve Importance, Choice of Magnetic materials	Chalk + Board	Electricity & Magnetism R. Murugesan	Assignment
XI	3	V	Ferrites, properties of dia, para & ferro magnetic materials, Lagevin's theory of dia	Chalk + Board	Electricity & Magnetism R. Murugesan	Assignment
XII	3	V	Langevin's theory of para, Weiss theory of ferromagnetism.	Chalk + Board	Electricity & Magnetism R. Murugesan	Assignment
5/12/22						

LESSON PLAN

Academic Year : 2022 - 2023
Class : I
Subject : SKILL BASED ELECTIVE : EVERYDAY PHYSICS
Hours / Week : 2 HRS / WEEK
Credits : 2

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

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Velocity, Acceleration, Force, Momentum, law of Conservation momentum, Newton's law of Motion	Chalk & Board	Brijlal & Subramaniyam Properties of Matter	Class test
II	2	I	Construction and working of Aeroplanes Jet planes, Rockets, Relative Velocity	Chalk & Board	Brijlal & Subramaniyam Properties of matter	Class test
III	2	I	Apparent change in the velocity when trains move in the same and opposite directions	Chalk & Board	Brijlal & Subramaniyam properties of matter	Class test
IV	2	II	Circular motion, Centripetal force, Centrifugal force, Motion of cyclist along a Circular path & Reason for Banking	Chalk & Board	Brijlal & Subramaniyam properties of Matter	Class test
V	2	II	Centrifuge and its Applications, Escape velocity, Orbital velocity, Parking orbits	Chalk & Board	Brijlal & Subramaniyam properties of Matter	Class test
VI	2	II	Energy, laws, Basic Concepts of atom, atomic number, Mass number, isotopes Nuclear Fission, Chain reaction	Chalk & Board	Brijlal & Subramaniyam Properties of Matter	Class test

VII	2	III	Nuclear Fusion, Reactions taking place in Sun and stars, Carbon nitrogen cycle, proton	Chalk & Board	Brijilal & Subramaniyam Properties of Matter	Class test
VIII	2	III	Semi Conductors, doping P & N type Semiconductor diode, LED application, Seven Segment display.	Chalk & Board	Brijilal & Subramaniyam Properties of Matter	Assignment
IX	2	IV	Current, Voltage, Ohm's law, photo Electric Effect, Solar cell, Emergency lamp, Sodium Vapour lamp, Mercury vapour lamp	Chalk & Board	M. Arul Thalapathi Basic and Applied Electronics	Assignment
X	2	V	House wiring Accessories, Switches lamp Holders, types, Ceiling Roses	Chalk & Board	M. Arul Thalapathi Basic & applied electronics	Assignment
XI	2	V	Socket outlets, plugs, wires and Cables types of wiring system	Chalk & Board	M. Arul Thalapathi Basic & Applied Electronics	Class test
XII	2	V	Supply of Electricity to Homes, Fuse, Earthing.	Chalk & Board	M. Arul Thalapathi Basic & Applied Electronics	Class test
80/8/22						

LESSON PLAN

Academic Year : 2023
Class : III B.Sc physics
Subject : Relativity and Quantum Mechanics
Hours / Week : 5
Credits : 5

Semester : VI
Class Code :
Subject Code : UCPHK20
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	Postulates of Special theory of relativity - Galilean tranformation equation Michelson - Morley Experiment	Chalk & Board	Modern physics R. Murugesan	Class test
II	3	I	Lorentz Transformation Equations Length Contraction and Time dilation	Chalk & Board	Modern physics R. Murugesan	Class test
III	3	I	Relativity of simultaneity and Addition of velocities. Variation of mass with velocity and Mass Energy Relation	Chalk + Board	Modern physics R. Murugesan	Class test
IV	3	I	Minkowski's four dimensional Space & Elementary ideas of General theory of relativity and significance, Red shift.	Chalk + Board	Modern physics R. Murugesan	Class test
V	3	IV	Free particle Solution of schrodinger's Equation, Bound state problems, particle in a Box	Chalk + Board	Introduction to quantum Mechanics Anil Das. G	Class test
VI	3	IV	Wave Equation & Solution for the particle - Eigen Values of Energy	Chalk + Board	Introduction to quantum Mechanics Anil Das G	Assignment

VII	3	IV	Normalization of the wave functions simple harmonic oscillator - Square well Potential of finite depth	Introduction to Chalk + Board	Introduction to Quantum Mechanics G. Aruldas	Class test
VIII	3	IV	Rectangular potential Barrier - Tunneling effect	Chalk + Board	Introduction to Quantum Mechanics G. Aruldas	Assignment
IX	3	V	Schroedinger Equation in Spherical Polar Coordinates	Chalk + Board	Element of quantum mechanics Kamal singh	Class test
X	3	V	Reduction of two body problems into one body problem, Hydrogen atom, wave Equation for the hydrogen atom	Chalk + Board	Element of quantum Mechanics Kamal Singh	Class test
XI	3	V	Seperation of Variables, Azimuthal, polar & Radial wave Equation, solution for Azimuthal & polar wave lugth	Chalk + Board	Elements of quantum Mechanics Kamal Singh	Class test
XII	3	V	Rigid Rotator, Moment of inertia of rigid rotator wave Equation for rigid rotator and Energy levels wave function for Rigid rotator	Chalk + Board	Elements of quantum Mechanics Kamal Singh	Class test

LESSON PLAN

Academic Year : 2023
Class : III B.Sc physics
Subject : Mobile Communication SKill Based
Hours / Week : 2/W
Credits : 2

Semester : VI
Class Code :
Subject Code : USPSEB20
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Zero generation, Push totalk, First Generation, Advanced mobile phone system	Chalk & Board	G.K Behera Mobile Communication	Class test
II	2	I	Second Generation, Advantages & disadvantages, Third generation, Fourth Generation	Chalk & Board	G.K Behera Mobile Communication	Class test
III	2	II	Frequency Reuse Concept, Channel Assignment, Hand off technique	Chalk & Board	G.K Behera Mobile Communication	Assignment
IV	2	II	Trunking and Grade of Service Cell spliting. Cell Sectoring	Chalk & Board	G.K Behera Mobile Communication	Class test
V	1	III	Free space propagation model, Fraunhofer region, Properties of radio waves	Chalk & Board	V. Jeyasri Mobile Communication	Class test
VI	2	III	Concept of Reflection, Concept of Diffraction	Chalk & Board	V. Jeyasri Mobile Communication	Assignment

VII	2	III	Scattering, Interference	Chalk + Board	V. Jayasri Mobile Communication	Class test
VIII	2	IV	Introduction, propogation in Near in distance, Curves for near in propagation	Chalk + Board	G. Radha Krishna Cellular + Mobile Communication	Class test
IX	2	IV	long distance propagation, Mobile to Mobile propagation. Dopper shift	Chalk + Board	G.Radha Krishna Cellular + Mobile Communication	Class test
X	2	V	Introduction, FDMA, TDMA CDMA	Chalk + Board	G.K Behra Mobile Communication	Class test
XI	2	V	Synchronous CDMA, Soft hand over	Chalk + Board	G.K Behra Mobile Communication	Class test
XII	2	V	Hard hand over, Roaming, SDMA	Chalk + Board	G.K Behra Mobile Communication	Class test

LESSON PLAN

Academic Year : 2023
Class : II M.sc physics
Subject : Electromagnetic Theory
Hours / Week : 5
Credits : 5

Semester : II
Class Code :
Subject Code : PCPHE20
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	Electrostatic potential, poissons Equation & laplau's Equation from Gauss law	Chalk & Board	Electromagnetic theory Chopra	Class test
II	2	I	Solution of laplau's Equation in Spherical Coordinates, Solution to Laplace Equation in cylindrical Coordinates & Cartesian coordinate	Chalk & Board	Electromagnetic theory Chopra	Class test
III	2	I	polar Molecules, Langevin Equation, Nonpolar Molecules, Clausius Mossoti Relation	Chalk & Board	Electromagnetic theory Chopra	Class test
IV	2	I	polarisation vector, Electric field at External & internal points due to polarization, Displacement Vector	Chalk & Board	Electromagnetic theory chopra	Class test
V	2	I	Conducting sphere in a Uniform field Dielectric Spere in a Uniform field	Chalk & Board	Electromagnetic theory Chopra	Assignment
VI	2	III	faraday's law of Electromagnetic induction Faradays law of vector form, Maxwell's displacement Vector Current, Maxwells Equation	Chalk & Board	Electromagnetic theory Sathyaprakash	Class test

VII	2	III	Electromagnetic potentials A & F, Maxwell Equation in terms of Electro magnetic potential	Chalk & Board	Electromagnetic Theory Satya prakash	Assignment
VIII	2	III	Non-uniqueness of Electromagnetic potentials Gauge invariance, Lorentz Gauge, Coloumb Gauge	Chalk & Board	Electromagnetic theory Satya prakash	Class test
IX	2	III	Conservation laws for a system of Charge & Electromagnetic fields, Equation of Continuity	Chalk & Board	Electromagnetic theory Satyaprakash	Class test
X	2	III	Momentum in EM fields, Energy in EM fields, Wave Equation in general Plane wave Sol for free space.	Chalk & Board	Electromagnetic theory Satyaprakash	Class test
XI	2	V	propogation of Electromagnetic waves in isotropic & anisotropic dielectrics	Chalk & Board	Electromagnetic theory Chopra	Class test
XII	2	V	Calculation of phase velocity, Reflective index	Chalk & Board	Electromagnetic theory Chopra	Class test

18/2/23

78

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LESSON PLAN

Academic Year :
Class :
Subject :

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

		Learning	Methods of Evaluation

Dr. P.Nisha Santhakumari

LESSON PLAN — P. NISHA SANTHAKUMARI

Academic Year : 2021-22 & 22-23 ODD SEMESTER
Class : II CHEMISTRY
Subject : Allied III : Physics - I
Hours / Week : 2 hrs/week
Credits : 4

Semester : III
Class Code :
Subject Code : UAPHA3&O
Total Hours : 30
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	-	Demonstration of Practical experiments	Hands on training.		
II	2	1	Stress - Strain - Hooke's law - Defn. of young's modulus, Rigidity modulus and Poisson's ratio	Chalk & Board. & LCD.	Text Books & Ereources.	Assignment, Seminar, Slip tests
III	2	1	Energy stored in a stretched wire - Problems.			CA exam.
IV	2	1	Bending of beams - Neutral axis - Expression for internal bending moment - Cantilever - Depression at its loaded end	"	"	"
V	2	1	Determination of young's modulus by non-uniform bending using microscope - I form girders - Problems	"	"	"
VI	2	1	Torsional couple - Potential energy stored in a twisted wire - Expression for couple per unit twist	"	"	"

VII	2	1	Torsional pendulum - Rigidity modulus by torsional oscillation - Rigidity modulus by static torsion method	"	"	"
VIII	2	4	Properties of sound - Longitudinal and transverse waves - Velocity and frequency of transverse vibrations along a stretched string	"	"	"
IX	2	4	Laws of transverse vibrations of strings - Determination of Ac frequency using sonometer - Problems	"	"	"
X	2	4	Ultrasonics - Piezo electric effect - Inverse Piezo electric effect - production of ultrasonic waves using Piezo electric oscillator.	"	"	"
XI	2	4	Defn. of Magnetostriction - Production of ultrasonic waves by Magnetostriction oscillator	"	"	"
XII	2	4	Applications of ultrasonics - Scientific, industrial and medical applications	"	"	"
XIII	2	4	Acoustics of buildings - Defn. of reverberation, - Reverberation time - Absorption coefficient - Sabine's formula - Factors affecting acoustics of buildings.	"	"	"
XIV	2	5	Polarisation - Defn. - Brewster's law - Double refraction - optical activity - Specific rotatory power.	"	"	"
XV	2	5	Function of a half shade - Laurent's half-shade polarimeter - Uses of Polarised light	"	"	"

LESSON PLAN — P. NISHA SANTHAKUMARI

Academic Year	: 2021-22 & 2022-23 ODD SEMESTER	**Semester**	: I
Class	: I M.Sc. Physics	**Class Code**	:
Subject	: Mathematical Physics - I	**Subject Code**	: PCPHA20
Hours / Week	: 2 hrs / week.	**Total Hours**	: 30
Credits	: 5	**Total Marks**	: 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	II	Introduction to matrices - Square matrix - Identity matrix - Transpose - Conjugate - Conjugate transpose	LCD & Chalk & Board	Text books & E-resources	Assignment Seminar Slip tests & CA.
II	2	II	Symmetric and Skew-symmetric matrices - Hermitian and Skew-Hermitian matrices - Determinant - Cofactors - Minors of a matrix	"	"	"
III	2	II	Singular and non-singular matrices - Adjoint of a matrix - Inverse of a matrix - Orthogonal matrices - Unitary matrices	"	"	"
IV	2	II	Characteristic eqn of a matrix - Evaluation of eigen values and eigen vectors	"	"	"
V	2	II	Cayley-Hamilton theorem - Inverse of a matrix using Cayley-Hamilton theorem.	"	"	"
VI	2	II	Important theorems on eigen values and eigen vectors	"	"	"

VII	2	II	Stochastic matrices - Theorem on stochastic matrix - Diagonalisation of matrices	LCD & Chalk & Board.	Text books & E-resources.	Assignment Seminar Slip tests & CA
VIII	2	IV	Special functions :- Bessel function - Series solution	"	"	"
IX	2	IV	Generating function - Jacobi series	"	"	"
X	2	IV	Orthogonal properties of Bessel - Evaluation of recurrence relations	"	"	"
XI	2	IV	Legendre Polynomial :- Series solution - Generating function	"	"	"
XII	2	IV	Rodrigue's formula - Orthogonal properties of Legendre polynomial	"	"	"
XIII	2	IV	Recurrence relations of Legendre polynomial - Hermite polynomial :- Series solution	"	"	"
XIV	2	IV	Generating function - Rodrigue's formula of Hermite polynomial	"	"	"
XV	2	IV	Orthogonal properties and Recurrence relations of Hermite polynomial.	"	"	"

LESSON PLAN

EVEN SEMESTER

Academic Year	: 2021-22, 2022-23	**Semester**	: IV
Class	: II B.Sc. Chemistry	**Class Code**	:
Subject	: Allied physics - II	**Subject Code**	: UAPHB20
Hours / Week	: 2 hrs/week	**Total Hours**	: 30
Credits	: 4	**Total Marks**	: 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Magnetic induction (B) - Magnetization (M) - Magnetic susceptability - Permeability - Relation between B, H and M.	Chalk & Board.	Text books.	Assignment, questioning sessions, & CA.
II	2	I	Properties of dia, para and ferro magnetic materials - Hysteresis loop - Defns. of Retentivity and Coercivity.	"	"	"
III	2	I	Energy loss due to hysteresis - Importance of hysteresis curves - Choice of magnetic materials	"	"	"
IV	2	II	Wave mechanics - Dual nature of matter - De Broglie wavelength - Problems Defn. of Phase velocity and group velocity - Relationship between them.	"	"	"
V	2	II	Experimental study of matter waves - Davisson and Germer's experiment	"	"	"
VI	2	II	Heisenberg's uncertainty principle - Applications - Determination of position of an electron with γ-ray microscope	"	"	"

VII	2	II	Diffraction of electron beam through a slit – Proof for non-existence of es inside the nucleus	Chalk & Board.	Text books	Assignment · questioning sessions & CA.
VIII	2	II	Wave function – Properties of wave function – Basic postulates of wave mechanics	"	"	"
IX	2	II	Derivation of time dependent Schroedinger eqn – Time independent Schroedinger equation.	"	"	"
X	2	IV	Fibre optics – Introduction – Optical fibre – Construction – Principle – Acceptance angle and condition for propagation through optical fibre	"	"	"
XI	2	IV	Classification of optical fibres – Single mode and multimode fibres – Step index and graded index fibres	"	"	"
XII	2	IV	Step index single mode fibre – Step index multimode fibre – Graded index multi mode fibre – Fibre optic communication system with block diagram.	"	"	"
XIII	2	V	Rectifiers – Half and full wave rectifiers – Full wave bridge rectifier construction, working and mathematical analysis	"	"	"
XIV	2	V	Filters – Types of filter circuits – Capacitor filter – Choke input filter – π-section filter	"	"	"
XV	2	V	Zener diode – Characteristics of Zener diode – Zener diode as Voltage regulator	"	"	"

LESSON PLAN

Academic Year : 2021-22, 2022-23 EVEN SEMESTER Semester : II
Class : I M.Sc. Physics Class Code :
Subject : Quantum Mechanics - I Subject Code : PCPHF20
Hours / Week : 6 hrs/week Total Hours : 90
Credits : 4 Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
			Basic formalism :- Limitations of Classical physics - Wave fn. for a free particle - Physical significance of wave	LCD & Chalk & Board.	Text books & E-resources.	Assignment Seminar. Slip tests & CA.
I	6	I	function - Linear operator - Eigen functions and eigen values - Hermitian operator - Theorem on Hermitian operator - Derivation of operators for momentum and total	"	"	"
			energy - Postulates of quantum mechanics.	"	"	"
II	6	I	Time dependent and time independent Schroedinger equations Derivation of expectation value of a	"	"	"
			normalized wave function - Ehrenfest's theorem.	"	"	"
III	6	I	Defn. of orthonormality - Schroedinger eqn in spherical polar coordinates - operator and eigen values of orbital	"	"	"
			angular momentum.			

IV	6	II	Applications :- Linear harmonic oscillator - zero point energy - Ladder operator - Particle in a spherically symmetric potential	LCD Chalk & Board.	Text books & E-resources.	Assignment Seminars Slip tests & CA.
V	6	II	System of two interacting particles - Rigid rotator in three dimensions - Problem of hydrogen atom.	"	"	"
VI	6	II	Particle in a spherical well - Three dimensional square well potential - The deuteron.	"	"	"
VII	6	III	General formalism :- Dirac's notation and Hilbert space - Types of eqns of motion - Schroedinger representation	"	"	"
			Heisenberg representation - Interaction representation.	"	"	"
VIII	6	III	Defn. of Momentum representation - probability density in momentum representation - Operator for position	"	"	"
			Coordinate - Operator for momentum - Eqn. of motion in momentum representation.	"	"	"
IX	6	III	Defn of Unitary transformation - Symmetry transformation - Translation in space - conservation of linear	"	"	"
			momentum - Translation in time :			

Semester :

LESSON PLAN

Academic Year	:	Semester	:
Class	:	Class Code	:
Subject	:	Subject Code	:
Hours / Week	:	Total Hours	:
Credits	:	Total Marks	:

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
			conservation of energy - Rotation in space : Conservation of angular momentum - Space inversion : Parity conservation.	"	"	"
			Angular momentum :- Orbital angular momentum operators - Total angular momentum J - Derivation of orbital angular momentum	"	"	"
X	6	IV	commutation relations - Eigen values of J^2 and J_z - Construction of total angular momentum matrices for different values of j.	"	"	"
XI	6	IV	Matrix representation of J^2 and J_z - Matrices for J_+, J_-, J_x and J_y - Spin angular momentum - Pauli's spin matrices - Spin vectors for spin half systems - Symmetric and anti-symmetric wave functions.	"	"	"

XII	6	IV	Addition of two angular momenta - Clebsch-Gordan coeffs - Selection rules - procedure for computation	LCD, Chalk & Board	Text books & E-resources.	Assignment Seminar Slip tests & CA.
			of CG coeffs - Computation of C-G coeffs for different values of j_1 and j_2.	"	"	"
			Approximation methods :- Time independent perturbation theory - Derivation of I order, II order	"		
XIII	6	V	perturbation eqns - Defn. of degeneracy Non-degenerate levels - First order correction to energy and wavefunction	"	"	"
			Second order correction to energy and wave function.	"		
XIV	6	V	Applications - Ground state of anharmonic osciliator - Effect of electric field on the ground state of hydrogen	"	"	"
			(Stark effect) - Degenerate energy levels - First order correction - Variational method prinaple - Application			
			to ground state of helium atom.			

LESSON PLAN

Academic Year :
Class :
Subject :
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
			WKB approximation - General solution - Validity of WKB approximation - Classical turning	"	"	"
XV	6	V	point - Connection formulae - Bound states in a potential well : WKB quantization rule -			
28/3/22			Application to Simple harmonic oscillator.			

Sr. X. Venci

Academic Year	: 2022-2023	**Semester**	: I / III
Class	: I B.Sc - Maths & II B.Sc. Chemistry	**Class Code**	:
Subject	: Allied : PHYSICS - I.	**Subject Code**	: UAPHA 20
Hours / Week	: 4 2 hrs.	**Total Hours**	: 30 HRS.
Credits	:	**Total Marks**	:

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	II	Viscosity: Stream line and turbulent flow - Critical Velocity - Viscous force - Co-efficient of Viscosity	Board & Chalk.	Allied Physics - R. Murugesan Properties of Matter	Slip Test.
II	2	II	Poiseuille's formula - Determination of Co-efficient of Viscosity of liquid by Poiseuille's method	Board and Chalk.	" "	Oral test
III	2	II	Problems - Comparison of Co-efficient Viscosities of two liquids using graduated burette	Board and Chalk	" "	Assignment Problems.
IV	2	II	Ostwald's Viscometer method - Terminal Velocity - Stokes law - Experimental method of calculating η for highly viscous liq.	Board and Chalk	" "	Slip Test.
V	2	II	Surface Tension - Definition - Excess of Pressure inside curved Surface - Problems	Board and Chalk	" "	Class Test.
VI	2	I	Determination of Surface Tension by method of drops - Interfacial Tension - Determination of Interfacial Tension	Board and Chalk	" "	Question session

VII	2	III	Specific heat Capacity - Defn. - Determination of Specific heat Capacity by method of mixtures.	PPt & Board & Chalk	Heat & Thermo dynamic By Brijilal Subramanian	Slip Test.
VIII	2	III	Half time radiation Correction - Specific Heat Capacity by Callendar and Barnes's method	PPt Board & Chalk	"	Revision
IX	2	III	Newton's law of Cooling - Determination of Sp. ht. Capacity by Newton's law of Cooling.	PPt Board & Chalk.	"	Question session.
X	2	III	Joule Kelvin effect - Defn. Temperature of inversion - Porous Plug Experiment.	Board & Chalk	Allied Physics R. Murugeshan.	Class Test
XI	2	III	Results - Theory of J.K. effect. Linde's Process - Liquefaction of Helium - Properties of Helium I & II	Board & Chalk.	Allied Physics R. Murugeshan Heat & Thermodynamics Brijilal Subramanian	Oral Test
XII	2	III	Superconductors - Type I & II Superconductors - Meissner effect - Applns. - Magnetic levitation Train.	PPt & Video Board & Chalk.	" Internet	Assignment
XIII	2	V	Interference - definition - Condition for interference - Interference in thin films	Board & Chalk	Allied Physics R. Murugeshan	Oral Test.
XIV	2	V	Newtons Rings - Determination of radius of curvature by forming Newton's Rings.	PPt Board & Chalk	"	"
XV	2	V	Air Wedge - Expression for fringe width - Expt. to measure the diameter	Board & Chalk	"	"

LESSON PLAN

Academic Year	: 2022-2023	**Semester**	: I
Class	: I M.Sc. PHYSICS	**Class Code**	:
Subject	: CLASSICAL MECHANICS	**Subject Code**	: PC PHB20
Hours / Week	: 2 Hrs.	**Total Hours**	: 2 hrs.
Credits	:	**Total Marks**	:

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Rigid Body dynamics - Introdn - Generalized Co-ordinates of a rigid body	PPT Board & Chalk	Classical Mechanics Kupta Kumar	Slip Test.
II	2	I	Body and Space reference Systems – Euler's Angles.	PPT Board & Chalk	" Classical Mech by Upadhyaya C.	Test
III	2	I	Infinitesimal rotation as Vectors and Components of Angular Velocity.	Board & Chalk	"	Oral test.
IV	2	I	Angular momentum and inertia tensor – Principal Axes	Board and Chalk	"	Question Review.
V	2	I	Principle moments of inertia - Rotational kinectic energy of a rigid body.	Board and Chalk.	"	Slip Test.
VI	2	I	Moment of inertia for different body systems - Euler's eqns of motion of a rigid Body.	Board and Chalk.	"	Oral Test

VII	2	I	Lagrange method - Torque free motion of a rigid body	Board & Chalk.	Classical Mechanics - Kapta Kumar C. - Upadhaya C.	Question Review.
VIII	2	I	Motion of a Symmetrical top under the action of gravity	Board & Chalk.	"	Assignment CA EXAM.
IX	2	IV	Introduction to Hamilton Jacobi Theory - Hamiliton-Jacobi eqn.	Board & Chalk.	Classical Mechanics Upadhayaya C	Class Test.
X	2	IV	Hamilton - Characteristic function - Physical significance	Board & Chalk.	"	Oral Test.
XI	2	IV	Linear Harmonic Oscillator by Hamilton Jacobi method.	Board & Chalk	"	Question Review
XII	2	IV	Action Angle Variables - Problem of harmonic oscillator by action angle variables.	Board & Chalk	"	Assignment
XIII	2	IV	Problems based on Hamilton Jacobi method.	Board & chalk	"	Oral Test
XIV	2	IV	Motion of a particle in a plane under a central force by Hamilton Jacobi method.	Board & Chalk	"	Class Test
XV	2	IV	Application to Kepler's problem [illegible] Hamilton Jacobi method.	Board & Chalk.	"	Revision.

LESSON PLAN

Academic Year : 2022 - 2023
Class : I ENGLISH 'A' SEC
Subject : SBE : Domestic Appliances
Hours / Week : 2 hrs/week.
Credits :

Semester : I & II
Class Code :
Subject Code : USPHF21
Total Hours : 30 hrs.
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Basic Concepts of Current: Definition of current, Voltage - Ohm's law	Board & Chalk.	Prepared Notes.	-
II	2	I	Verification of Ohm's law - Electrical measuring meters - Ammeter - Voltmeter - Multimeter	Board & Chalk Demo of expt.	"	Oral Test.
III	2	I	Conductors - Insulators - Uses of conductors and insulators	Board & Chalk.	"	-
IV	2	II	Resistance - Resistors in Series and Resistors in parallel	Board & Chalk	"	-
V	2	II	Colour coding of Resistors - Capacitance - Capacitors in Series and parallel.	Board & Chalk Demo for finding the value of Resistors	"	Class Test.
VI	2	II	Inductors - Self inductance and mutual inductance - Faraday's law of em induction.	Board & Chalk	"	CA_Exam

VII	2	III	Light energy - Properties of light - effects of electric current	Board & Chalk	SBE Notes	—
VIII	2	III	Physical, heating & magnetic effects - Safety measures in handling electrical appliances.	Board & Chalk	"	—
IX	2	III	Earthing - Advantages of earthing - Working of electric bulb, Fluorescent tube, CFL & LED bulbs - Comparison.	PPT Board & Chalk	"	Assignment
X	2	IV	Construction and working of electric iron box.	PPT Board & Chalk.	"	—
XI	2	IV	Construction and working of immersion heater & Electric Stove	Board & Chalk	"	Oral Test
XII	2	IV	Working of air conditioner Its classification - working of Washing machine	Board & Chalk	"	—
XIII	2	V	Eddy currents & its uses - Electromagnets - electric bell	PPT Board & Chalk.	"	Class Test
XIV	2	V	Construction & parts of Electric fan & Induction Stove	PPT Board & chalk.	"	—
XV	2	V	Working of Microwave Oven & Revision	Board & chalk.	"	ORAL

LESSON PLAN

Academic Year	: 2022 - 2023	**Semester**	: IV
Class	: II B.Sc. Chemistry / I B.Sc. Maths.	**Class Code**	:
Subject	: Allied IV: Physics - II	**Subject Code**	: UAPHB20
Hours / Week	:	**Total Hours**	: 30 hrs.
Credits	: 2 hrs.	**Total Marks**	:

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Tranient Currents - Growth And decay of Current in L-R Circuit.	Board and Chalk.	Electricity and Magnetism R. Murugeshan	Problems Test.
II	2	I	Growth and decay of Charge of a Capacitor through resistor (C-R) circuit. & Problems	Board and Chalk	Electricity & Magnetism R. Murugeshan	Problems Assignment
III	2	I	Measurement of high resistance by leakage method - time const. Problems.	Board & Chalk.	"	Class Test.
IV	2	I	Magnetic induction - Magnetization. Magnetic Susceptibility - Relation between B, H & M - Prop. of diamagnetic mat.	Board & Chalk	"	Slip Test.
V	2	I	Hysterisis Loop - Retentivity & Coercivity - Energy loss due to hysterisis - The imp. of hysterisis Curves & Choice of mag. materials	Board & Chalk.	"	Assignment on Mag. materials
VI	2	-	REVISION	—	-	I CA EXAM.

VII	2	3	Artificial Transmutation - Rutherford's Experiment - Types of Nuclear reactions	Board & Chalk	Modern Physics by R. Murugeshan &	Oral Test
VIII	2	3	Energy balance and Q-Value equation - Threshold energy of an endoergic reaction.	Board & Chalk	"	Slip Test.
IX	2	3	Neutrons - properties of Neutron - Classification & detection of neutrons - Problems for Q-Value eqn	Board & Chalk	"	Class Test.
X	2	3	Particle accelerators - Linear accelerator - Particle detector - & Betatron - Wilson Cloud Chamber	Board & Chalk	"	Assignment
XI	2		REVISION	—	—	II CA EXAM
XII	2	5	Opto-electronic devices - Photo-diode - principle - Characteristics of photo diode - Applications.	PPT - Presentation	Principle of Electronics V.K. Mehta	—
XIII	2	5	Light emitting diode - Principle - Characteristics of LED - Power indicator - Seven segement display	PPT - Presentation	"	Oral Test
XIV	2	5	Solar Cell - principle - Construction and working of a solar cell - Characteristics - Uses.	PPT - Presentation	"	Discussion
			REVISION	—	—	Question

LESSON PLAN

Academic Year : 2022 - 2023
Class : II B.Sc. PHYSICS
Subject : NUCLEAR PHYSICS
Hours / Week :
Credits : 2

Semester : IV
Class Code :
Subject Code : UCPHJ20
Total Hours : 30 hrs.
Total Marks : 100 marks.

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	1	Introduction & Overview - Classification of nucleus - Few problems	Board & Chalk	Video lessons Moodern Physics R. Murugeshan & co.	Assignment
II	2	1	General properties of nucleus - Binding energy - Mass defect - Packing fraction	Board & Chalk	Modern Physics R. Murugeshan & co.	Oral Test.
III	2	1	Nuclear Stability - Nuclear forces - Meson theory of Nuclear forces	Video lessons with Board & Chalk	Video lessons - Forte Learning Physics Modern Physics R. Murugeshan	Problems Assignment
IV	2	1	Nuclear Models - Liquid drop model - Weizaekers Semiempirical mass formula	Board & Chalk.	Modern Physics R. Murugeshan	Class Test
V	2	1	Shell model - Evidences of magic numbers - Collective model.	Board & Chalk.	"	Discussion. Peer group
VI	2		REVISION	—	—	I CA Exam.

VII	2	4	Artificial Trasmutation of elements - Rutherford's Experiment - Nuclear reaction	Board & Chalk	Modern Physics by R. Murugeshan	Slip Test
VIII	2	4	Energy balance in a nuclear reaction - Q value Equation - Types of nuclear reactions with examples.	Board & Chalk	"	Oral Test.
IX	2	4	Conservation laws of nuclear reactions - Threshold energy of an endoergic reaction	Board & Chalk	"	Class Test
X	2	4	Discovery of neutrons - Properties of neutrons - Classification and detection of neutrons	Board & Chalk.	"	Assignment
XI	2	4	Thermal neutrons - Induced radioactivity - Applications of radio isotopes in medicine. agriculture & Industry - Radio Carbon dating.	Board & Chalk	"	Seminar
XII			REVISION			II CA Exam.
XIII	2	5	Discovery - Nuclear fission - Calculation of energy in amu - Energy released in fission	Board & Chalk	Modern Physics by R. Murugeshan	Discussion
XIV	2	5	Bohr's Wheeler theory of nuclear fission Chain reaction - atom bomb - Nuclear reactors	Board & Chalk.	"	Group Study.

Ms. R. Mary Jamila

LESSON PLAN

Academic Year	: 2021-22 & 2022-23	**Semester**	: III
Class	: II MSC	**Class Code**	:
Subject	: Spectroscopy	**Subject Code**	: PCPHI20
Hours / Week	: 3 hrs	**Total Hours**	: 45 hrs
Credits	: 4	**Total Marks**	: 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	1	Microwave spectroscopy Intro - Pure rotational spectra of diatomic molecules	PPT ONLINE	C.N. Banwell	
II	3	1	study of linear molecules & symmetric top molecules. Polyatomic molecules.	PPT ONLINE	Aruldhas. G	
III	3	1	Hyperfine structure & quadrupole Moment of linear molecules.	PPT ONLINE	Aruldhas. G	
IV	3	1	Experimental techniques - Molecular structure determination - Stark effect - Applications.	Chalk & Board	Aruldhas G	
V	3	4	NMR & NQR techniques - Theory of NMR - Bloch equations.	Chalk & Board	Aruldhas G NPTEL lectures	
VI	3	4	Steady State solutions of Bloch equations. Theory of Chemical shifts.	Chalk & Board	Aruldhas G NPTEL	

VII	3	4	Experimental methods - Single coil method & double coil Methods.	Chalk & Board	B.K. Sharma	
VIII	3	4	Pulse method - High resolution method	Chalk & Board	Aruldhas G	
IX	3	4	Applications of NMR to quantitative measurements.	Chalk & Board	Aruldhas G	
X	3	4	Introduction to NQR, Quadrupole Hamiltonian of NQR	Chalk & Board.	Aruldhas G	
XI	3	4	Nuclear Quadrupole energy levels for axial & non-axial symmetry	Chalk & Board	Aruldhas G	
XII	3	4	Experimental techniques & applications.	Chalk & Board	Aruldhas G	
XIII	3	5	ESR & Mossbauer spectroscopy - Quantum mechanical treatment of ESR.	Chalk & Board	Aruldhas G	
XIV	3	5	Nuclear interaction & hyperfine structure - Relaxation effects	Chalk & Board	Aruldhas G	
XV	3	5	Basic principles of spectrographic Applications of ESR and	Chalk &	Aruldhas G	

LESSON PLAN

Academic Year : 2021-22 & 2022-23
Class : II MSc.
Subject : Microprocessor & Microcontroller
Hours / Week : 2
Credits : 4

Semester : III
Class Code :
Subject Code : PCPHK20
Total Hours : 30 hrs
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	1	Architecture - Functional pin diagram.	PPT ONLINE	R.S. Gaonkar	
II	2	1	Buses - Address bus, data bus, multiplexing address/data bus.	PPT ONLINE	R.S. Gaonkar	
III	2	1	Instruction format - instruction fetch & execution.	PPT ONLINE	Nagoor kani	
IV	2	1	Machine & Instruction cycle - T-State.	Chalk & Board	Nagoor kani	
V	2	1	Addressing modes - Instruction set.	Chalk & Board	Nagoor kani	
VI	2	1	Data transfer group - arithmetic/logic group.	Chalk & Board	Nagoor kani	

VII	2	1	Branch group - Stack & I/O control instruction	Chalk & Board	Nagoor kani	
VIII	2	1	Programming: Picking up Largest/ Smallest number - Ascending & Descending order.	Chalk & Board	Vijeyendran	
IX	2	1	Code Conversion: Binary to BCD & BCD to Binary, Binary to ASCII & Vice-Versa, ASCII → BCD & Vice	Chalk & Board	Vijeyendran	
X	2	2	ROM & RAM memory - Memory interface: 2K×8, 4K×8 ROM & RAM interface.	Chalk & Board	Nagoor kani	
XI	2	2	8255 programmable interface I/O Functional pin configuration - Internal Architecture.	Chalk & Board	Nagoor kani Gnanakar. R.S	
XII	2	2	Interfacing of 8255 - ADC interface	PPT	Vijeyendran	
XIII	2	2	DAC interface - Wave form generator.	PPT	Vijayendran	
XIV	2	2	Hex keyboard interface - 4 step Stepper motor interface.	PPT	Nagoor kani Gnanakar R.S	
XV	2	2	Traffic regulation interface	PPT	Nagoor kani Gnanakar R.S	

LESSON PLAN

Academic Year : 2021-22 & 2022-23
Class : I MSc.
Subject : Statistical Mechanics
Hours / Week : 3
Credits : 4

Semester : I
Class Code :
Subject Code : PCPHC20
Total Hours : 45 hrs
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	2	Ensembles - Introduction - Phase space.	PPT ONLINE	B.B. Land	Oral test & Exam
II	3	2	Micro canonical, Canonical & grand canonical ensembles.	PPT	Sathyaprakash	Oral test & Exam
III	3	2	Trajectories & density of states	PPT	B.B. Land	Oral test & Exam
IV	3	2	Liouville's theorem	PPT	Sathyaprakash	Oral test & Exam
V	3	2	Partition function - Calculation of statistical quantities	Chalk & Board	Gupta Kumar	Solving Problems
VI	3	2	Energy & density fluctuations	Chalk & Board	B.B. Land	Oral test & Exam

VII	3	3	Postulates of Classical & quantum statistics.	Chalk & Board	Book	
VIII	3	3	Density of matrix - statistics of indistinguishable particles	Chalk & Board	Book	
IX	3	3	Maxwell - Boltzmann distribution function - Broadening of spectral lines.	Chalk & Board	Book	
X	3	3	Bose - Einstein statistics - Bose - Einstein distribution of gas.	Chalk & Board	Book	
XI	3	3	Equation of state - black body radiation	Chalk & Board.	Book	
XII	3	3	Bose - Einstein condensation - Landu's theory of liquid Helium	Video lectures (NPTEL)	Book NPTEL	
XIII	3	5	Ising model - Mean field theories of the Ising model in 3D, 2D & 1D	Chalk & Board	Book	
XIV	3	5	Exact solutions in 1D	Chalk & Board	Book	
XV	3	5	Correlation of spins - Order parameters	PPT	Book.	

LESSON PLAN

Academic Year : 2022 - 2023
Class : I M.Sc Physics
Subject : Mathematical Physics - II
Hours / Week : 2 hrs
Credits : 5

Semester : II
Class Code :
Subject Code : PCPHD20
Total Hours :
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	2	Tensors, Transition of Coordinate and Einstein's summation Convention	Chalk & board	Mathematical Physics - Sathyaprakash	Class Test
II	2	2	Contra Variant & co-Variant Tensor, Rank and Higher ranks of Tensor	Chalk & board	Mathematical Physics - Sathyaprakash	Class Test
III	2	2	Kronecker delta and Levi Civita symbol and Algebraic operations	Chalk & board	MP- Sathya Prakash	Class Test
IV	2	2	Symmetric and anti-symmetric tensors	Chalk & board	MP- Sathya Prakash	Class Test
V	2	2	Christoffel's 3-index and Covariant derivative of a tensor	Chalk & board	MP- Sathya Prakash	Assignment
VI	2	3	Laplace Transform and Inverse Laplace transforms.	Chalk & board	MP- B.D. Gupta	Class Test

VII	2	3	Linear differential Equation and Evaluation of Integrals	Chalk & board	MP - B.D. Gupta	Class Test
VIII	2	3	Fourier Transforms and Fourier sine and Cosine Transform	Chalk & board	MP - B.D. Gupta	Assignment
IX	2	3	Convolution Theorem	Chalk & board	MP - B.D. Gupta	Assignment
X	2	3	Simple applications of Transforms.	Chalk & board	MP - B.D. Gupta	Class Test
XI	2	5	Groups, subgroup and conjugate classes	Chalk & board	MP — H.K. Dass	Class Test
XII	2	5	Homomorphism and isomorphism between groups	Chalk & board	MP - H.K. Dass	Class Test
XIII	2	5	Point groups and reducible & irreducible representations.	Chalk & board	MP - H.K. Dass	Assignment
XIV	2	5	Schur's lemma and Great Orthogonality theorem	Chalk & board	MP - H.K. Dass	Assignment
XV	2	5	Two dimensional (R+2) & (R+3)	Chalk & board	MP - H.K. Dass	Class Test

LESSON PLAN

Academic Year : 2022–2023
Class : II M.Sc Physics
Subject : Nuclear and Particle Physics
Hours / Week : 3
Credits : 4

Semester : IV
Class Code :
Subject Code : PCPHM20
Total Hours :
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	1	Nuclear force and Ground state of Deuteron	Chalk & board	Nuclear Physics – M.L. Pandya	Class Test
II	3	1	Meson theory and Yukawa potential	Chalk & board	NP – M.L. Pandya	Class Test
III	3	1	Magnetic and Quadrupole moment of Deuteron	Chalk & board	NP – M.L. Pandya	Class Test
IV	3	1	Scattering and Effective range theory, Spin dependence.	Chalk & board	NP – D.C. Tayal	Assignment
V	3	1	Charge Independence and isospin formalism	Chalk & board	NP – M.L. Pandya	Assignment
VI	3	3	Liquid drop model and Nuclear stability	Chalk & board	NP – M.L. Pandya	Class Test

II	3	3	Bohr Wheeler theory of fission	PPT	NP- M.L. Pandya	Class Test
III	3	3	Shell model and spin-orbit coupling	PPT	NP- M.L. Pandya	Assignment
IV	3	3	Angular momenta and parities of Nuclear ground state	PPT	NP- M.L. Pandya	Assignment
V	3	3	Collective model of Bohr and Mottelson	PPT	NP- M.L. Pandya	Class Test
VI	3	5	Types of interaction and Hadrons, leptons	PPT	NP- M.L. Pandya	Class Test
VII	3	5	Quantum numbers and Conservation laws	PPT	NP- S.N. Ghoshal	Assignment
VIII	3	5	Elementary ideas of CP & CPT	PPT	NP- S.N. Ghoshal	Assignment

VII	3	3	Bohr wheeler theory of fission	PPT	NP- M.L. Pandya	Class Test
VIII	3	3	Shell model and spin-Orbit Coupling	PPT	NP- M.L. Pandya	Assignment
IX	3	3	Angular momenta and parities of Nuclear ground state	PPT	NP- M.L. Pandya	Assignment
X	3	3	Collective model of Bohr and Mottelson	PPT	NP- M.L. Pandya	Class Test
XI	3	5	Types of interaction and Hadrons/leptons	PPT	NP- M.L Pandya	Class Test
XII	3	5	Quantum numbers and Conservation laws	PPT	NP- S.N. Ghoshal	Assignment
XII	3	5	Elementary ideas of CP & CPT	PPT	NP- S.N. Ghoshal	Assignment

Dr. N. R. Devi

LESSON PLAN

Academic Year : 2022-2023
Class : II M.Sc
Subject : Quantum Mechanics II
Hours / Week : 3 H/W
Credits : 4

Semester : III
Class Code :
Subject Code : PCPHJ20
Total Hours : 6 H/W (72 hours)
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	I	Introduction - Relativistic Quantum Mechanics - Interpretation of Klein-Gordon equation.	PPT	QM - by Gupta Kumar Sharma, Aruldhas	Assignment, Seminar Test
II	3	I	Particle in a Coulomb field	PPT	Gupta Kumar Sharma	"
III	3	I	Dirac's equation for a free Particle - Dirac matrices - Traces	PPT.	Gupta kumar Sharma	"
IV	3	I	Covariant form of Dirac equation - Probability density - plane wave Solution - negative energy states.	PPT	Aruldhas	"
V	3	I	Spin of the Dirac particle (electron)	Board and chalk	Gupta kumar Sharma	"
VI	3	I	Magnetic Moment of an electron due to Spin.	Board and Chalk.	Gupta Kumar Sharma.	"

VII	3	V	Introduction - Second Quantization concepts of classical Mechanics - co-ordinates of a field.	Board and chalk	Aruldhas	"
VIII	3	V	classical field equation in Lagrangian form - classical field equation in Hamiltonian form	Board and chalk	Aruldhas	"
IX	3	V	Quantization of Schrondinger equation - creation and annihilation operators.	Board and chalk	Aruldhas	"
X	3	IV	Spin orbit Interaction.	Board and chalk	Aruldhas	"
XI	3	IV	Radial equation for an electron in a central potential	Board and chalk	Gupta kumar Sharma	"
XII	3	IV	Hydrogen atom problem - lamb shift	Board and chalk	Gupta kumar	"
XIII	3	IV	Invariance of Dirac equation under lorentz transformation - Density matrix - Spin density matrix	Board and chalk	Aruldhas	"
XIV	3	IV	T - Transformation for the Dirac equation in the presence of EM field	Board and chalk	Aruldhas	"
XV	3	IV	Magnetic Resonance - Projection operators for energy and spin.	Board and	Aruldhas	"

LESSON PLAN

Academic Year : 2022-2023
Class : I M.Sc
Subject : Spectroscopy
Hours / Week : 3 H/w
Credits : 4

Semester : II
Class Code :
Subject Code : PCPHI20
Total Hours : 6 H/w (72 hours)
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	II	Introduction IR Spectroscopy Vibrational spectroscopy of Diatomic molecule.	PPT	Spectroscopy by Anuldhas Gupta Kumar	Seminar, Problem Solving, Assignment
II	3	II	Harmonic oscillator, Anharmonic oscillator.	PPT	Gupta Kumar Sharma	"
III	3	II	Rotational vibrators - Rigid and non-rigid rotators.	PPT	Gupta Kumar Sharma	"
IV	3	II	Normal modes of Vibrations of Polyatomic molecule - Inversion Spectrum of Ammonia.	PPT	Anuldhas	"
V	3	II	Experimental techniques of - IR Spectrophotometer	PPT	Anuldhas	"
VI	3	II	Reflectance Spectroscopy - Applications of IR Spectroscopy	PPT	Net Notes.	"

VII	3	III	Introduction - Raman Spectroscopy classical and Quantum theory of Raman Scattering	PPT Board and chalk	Aruldhas	11
VIII	3	III	Raman effect and molecular structure - Raman effect and crystal structure	Board and chalk	Aruldhas	11
IX	3	III	Raman effect in relation to inorganic, organic and physical chemistry	Board and chalk	Aruldhas	11
X	3	III	Experimetal Raman techniques	Board and chalk	Aruldhas	11
XI	3	III	Coherent anti Stokes Raman Spectroscopy	Board and chalk	B. K. Sharma	11
XII	3	III	Applications of IR and Raman in molecular Structural Confirmation of H_2O and CO_2 molecules.	Board and chalk	B. K. Sharma	11
XIII	3	IV	Mossbauer effect - Recoilless emission and absorption - Spectrum	Board and chalk	Aruldhas	11
XIV	3	V	Experimental methods - Spectro photometer - Hyperfine Interactions.	Board and chalk	Aruldhas	11
XV	3	V	chemical Isomer Shift - Electric	Board and	Aruldhas	11

LESSON PLAN

Academic Year : 2022-2023
Class : I M.Sc
Subject : Classical Mechanics
Hours / Week : 4/w
Credits : 5

Semester : I
Class Code :
Subject Code : PCPHB20
Total Hours : 60 hours
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	4	II	Newton's equation and conservation laws for system of particles - constraints - Generalized co-ordinates Principle of Virtual work	PPT	Classical Mechanics By Upadhyaya.	Problems, Seminar, Assignment.
II	4	II	D'Alembert's principle - Lagrange's equation from D'Alembert's principle Procedure for formation of Lagrange's equation.	PPT	Upadhyaya	"
III	4	II	Kinectic energy in generalized co-ordinates - Lagrange's equation from Hamilton's principle - Hamilton's equations	PPT	Upadhyaya	"
IV	4	II	Δ-Variations - Principle of least action - Applications - (Atwood's machine, compound pendulum and LC circuit).	PPT	Upadhyaya	"
V	4	III	Introduction - canonical transfor-mations and their generators - generating functions.	PPT	Upadhyaya	"
VI	4	III	Procedure for applications of canonical transformation - Infinitesimal contact transformations	PPT	Upadhyaya.	"

VII	4	III	Problem on Canonical transformations for Simple harmonic oscillator	Board & chalk	Upadhyaya	Problems, Seminar, Assignment
VIII	4	III	Lagrange's and Poisson Brackets notation	"	"	"
IX	4	III	Proof of invariance of Poisson's Bracket under canonical transformations	"	"	"
X	4	V	Introduction - General theory of Small oscillations	"	"	"
XI	4	V	Secular equations and eigen Value equations - solution to eigen value.	"	"	"
XII	4	V	One dimensional oscillator - The L of one dimensional oscillator and its solution	"	"	"
XIII	4	V	Two coupled oscillators - L equation of two coupled oscillators and its solution	"	"	"
XIV	4	V	Example of two coupled oscillator - Two coupled pendulum	"	"	"
XV	4	V	Vibrations of linear triatomic molecule	"	"	"

LESSON PLAN

Academic Year : 2022–2024
Class : I M.Sc
Subject : Electromagnetic theory
Hours / Week : 3H/W
Credits : 5

Semester : II
Class Code :
Subject Code : PCPHE20
Total Hours : 45 hours
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	II	Introduction to Magnetostatics Magnetic field as Steady current current density J, Ampere's circuital law	Board and chalk.	Chopra Agarwal	Assignment, Seminar, Problems Solving
II	3	II	Force - current carrying charges b/w wires in parallel, point charge in Magnetic field.	"	"	"
III	3	II	Magnetic Sclar potential, Application to a circular coil, - Magnetic Vector potential, long current carrying wire	"	"	"
IV	3	II	Lorentz condition - Magnetic Shielding	"	Sathya Prakash	"
V	3	II	Energy in a magnetic field. closed loop circuit.	"	"	"
VI	3	IV	Introduction - Fields and radiation of localized Sources - oscillating electric dipole definition.	"	"	

VII	3	IV	Oscillating electric dipole Radiation - Poyting Vector - Radiated Power	"	Sathyaprakash	"
VIII	3	IV	Radiation from a small current element Eq and Radiation Resistance	"	"	"
IX	3	IV	Radiation from a linear half wave antenna - E, B, radiated power.	"	"	"
X	3	IV	Anttenna arrays, Broad side array End fire array - Radiation Pressure, EM oscillators.	"	"	"
XI	3	V	Propagation of EM waves in isotropic and anisotropic dielectric	"	"	"
XII	3	V	Conducting media - phase velocity, Refractive index - Skin depth.	"	"	"
XIII	3	V	linear circular polarization - Reflection and refraction at a plane interface.	"	"	"
XIV	3	V	Propagation of waves in Rectangular waveguide - TE, TM modes.	"	"	"
XV	3	V	Cavity resonator - Faraday law of induction	"	"	"

LESSON PLAN

LESSON PLAN

Academic Year : 2022-2023
Class : I M Sc
Subject : Human Rights
Hours / Week : 1 hour
Credits : 2

Semester : II
Class Code :
Subject Code : PNHRA16
Total Hours :
Total Marks : 100.

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	1	I	Human rights - Introduction Definition.	Board and chalk	Auxilium college Book Human Rights	Seminar CA exam Project
II	1	I	Origin and development Elements of Human Rights	"	"	"
III	1	I	Kinds of Human Rights	"	"	"
IV	1	I	Origin of Universal Declaration	"	"	"
V	1	I	Provisions - Universal - civil and political Rights	"	"	
VI	1	I	Economic Social and cultural Rights.	"	"	

VII	I	III	Effect of the Universal declaration of Human Rights Indian Constitution & Universal	Board and chalk	"	"
VIII	I	III	International covenants on Human Rights - Part I, II, III	Board and chalk	"	"
IX	I	III	Kinds of civil and Political Rights - Part IV, V	"	"	"
X	I	V	Atomic Human Trafficking and Protection of Vulnerable groups National Policy - Empowerment	"	"	"
XI	I	V	International covenant on Economic, Social and cultural Rights of women	"	"	"
XII	I	V	Policy Prescriptions - Decision making - Poverty - Micro credit	"	"	"
XIII	I	V	Social empowerment of women Nutrition - Drinking water	"	"	"
XIV	I	V	Rights of girl child - Mass media - Juvenile Justice	"	"	"
XV	I	V	Prevention sexual offences against children act 2012	"	"	"

LESSON PLAN

Semester : IV

LESSON PLAN

Academic Year : 2022-2023
Class : II M.Sc
Subject : Elective IV A : Fiber optics and Non-linear optics
Hours / Week : 5 H/W
Credits : 4

Semester : IV
Class Code :
Subject Code : PEPH0420
Total Hours : 75 hours
Total Marks : 100.

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	5	I	Ray theory transmission - Total Internal Reflection - acceptance angle, numerical aperture and Skew rays evanescent field - Goos Haechen shift	Board and chalk.	optical fiber communication by John. M. Senior	Test, CA Assignment Slip Test Problems
II	5	I	LED - Structure - light Source materials - Quantum efficiency - LED Power - Modulation Laser diode	"	"	"
III	5	I	Modes - threshold condition - Radiation Pattern - Temperature effects - Mode Locking Laser - Linearity & reliability.	"	"	"
IV	5	II	Glass and plastic fibers - Step index single, multi - Graded Fiber modes - Single, multi, Graded	"	"	"
V	5	II	Single mode fibers - cut off λ - Mode field diameter - spot size - Effective RI - Fiber loss - Intrinsic and extrinsic absorption	"	"	"
VI	5	II	Linear Scattering losses - Rayleigh Scattering - Mie scatting - Non-linear Scattering losses - Stimulated Brillouin and Raman Scattering, Intermodal dispersion - modal noise - SM, MM.			

VII	5	III	Glass fibers - Preparation of glass fibers - liquid phase techniques - Fiber drawing - Vapor phase	Board and chalk	John M. Senior	11
VIII	5	III	deposition techniques - OPVD - VAD, Modified chemical vapour deposition - plasma - activated CVD.	11	11	11
IX	5	III	optical fibers - Multimode step and graded index fibers - Single mode plastic clad and all Plastic fibers	11	11	11
X	5	IV	Stability and fiber transmission Microbending - Hydrogen absorption Fiber alignment and joint loss - SM fiber - MM fiber	11	11	11
XI	5	IV	Fiber splices - Fusion - Mechanical - Multiple-Fiber connectors - cylindrical ferrule - expanded beam connectors	11	11	11
XII	5	IV	GRIN rod lenses - fiber couplers - three and four port couplers - Star couplers	11	11	11
XIII	5	V	Wave propagation in anisotropic crystal, polarization response of materials to light - SHM - Sum difference	11	william silvast	11
XIV	5	V	third HM, Intensity RI - Self focusing - defocusing - phase 4 wave mixing - Matching	11	11	11
XV	5	V	Concept of Solitons - formation of solitons - KdV equation - NLSE	11	11	11

LESSON PLAN

Academic Year : 2023-2025
Class : I UG
Subject : Allied physics
Hours / Week : 2
Credits :

Semester : even
Class Code :
Subject Code :
Total Hours : 30
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Wave mechanics - Dual nature of light matter - De Broglie wavelength - Introduction	Board and chalk	Modern Physics Murugesan	Assignment CA exam, Problems
II	2	I	Problems - Definition of phase velocity group velocity Relation Ship b/w them.	"	"	"
III	2	I	Experimental Study of matter waves - Davission Germer's Experiment.	"	"	"
IV	2	I	Heisenberg uncertainity principle Applications - Determination of Position of an electron with γ ray	"	"	"
V	2	I	Diffraction of e beam - non-existence of electrons inside nucleus wavefunction - Postulates - Properties	"	"	"
VI	2	I	Derivation of time dependent & time independent wave Schrodinger's equation.	"	"	"

VII	2	II	Crystal - Definition of Unit cell - Miller indices - Type of Crystal Systems	Board and Chalk	"	"
VIII	2	II	Bravais lattice - reciprocal lattice Derivation Bragg's law -	"	"	"
IX	2	II	Fiber optics Introduction - optical fiber - construction Principle - θ_a, NA.	"	"	"
X	2	II	Classification of optical fiber, SM and MM fiber - Step index and graded index fiber	"	"	"
XI	2	II	SISM - SIMM - GIBIN - communication - Block diagram	"	"	"
XII	2	II	Laser - principle - Semiconductor Laser - Nd - YAG Laser - Application of Laser.	"	"	"
XIII	2	V	Rectifiers - Half and full wave rectifiers - Bridge rectifier - Construction - Working and Math analyses	"	"	"
XIV	2	V	Filters - Types of filter circuits Capacitor filter - Choke input filter - π section filter	"	"	"
XV	2	V	Zener diode - Characteristics of Zener diode - Zener diode as	"	"	"

LESSON PLAN

Semester :

Dr. R. Sarjila

LESSON PLAN

(ODD)

Academic Year : 2022-23
Class : II M.Sc
Subject : Numerical Methods & C Programming
Hours / Week : 2 Hrs
Credits :

Semester : III
Class Code :
Subject Code : PEPHE20
Total Hours : 5
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	2	I	Methods of false position	Chalk and board	Numerical Methods By G. Balaji	Assignments CA Test etc.
II	2	I	Newton's method.	"		"
III	2	I	Fixed point - Iteration method	"	"	"
IV	2	I	Interpolation - Lagrangian polynomials	"	"	"
V	2	I	Divided differences	"	"	"
VI	2	I	Newton's forward and backward difference formulae	"	"	"

VII	2	II	Derivatives - Newton's forward interpolation formula	Chalk & Board	Numerical methods by	Assignments, Home works &
VIII	2	II	Newton's backward interpolation & Stirling formula.	"	G. Balaji	CA exam
IX	2	II	Numerical integration by Trapezoidal rule of equations	"	"	"
X	2	II	Numerical integration - Simpson's 1/3 rule.	"	"	"
XI	2	II	Simpson's 3/8 rule. Numerical Integration.	"	"	"
XII	2	II	Taylor series method.	"	"	"
XIII	2	II	Euler method	"	"	"
XIV	2	II	Modified Euler's method.	"	"	"
XV	2	II	Runge-Kutta method	"	"	(CA)

XV	2	II	Runge-Kutta method	"	"	"

LESSON PLAN

(ODD)

Academic Year : 2022-2023
Class : II M.Sc
Subject : Microprocessor & Microcontroller
Hours / Week : 3
Credits : 4

Semester : III
Class Code :
Subject Code : PCPHK20
Total Hours : 45
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	3	3	Introduction to Microcontroller. 8051 functional Pin diagram- Architecture	PPT	Muhammed Ali	Assignments, Slip test, Seminars.
II	3	3	Internal registers- Special function registers- Memory organization	"	"	"
III	3	3	Instruction set - Addressing modes programming	Chalk & Board	Soumitra Kumar	"
IV	3	3	Addition and Subtraction Multiplication and division	"	"	"
V	3	3	Ascending/ descending order- Maxima and minima Sorting	"	"	"
VI	3	4	8051 Input/ output ports 8051 Interrupts	PPT	"	"

VII	3	4	Interface 8051 to external memory and I/o devices using its I/o ports	PPT	Soumitra kumar	Slip tests, seminar, assignments, CA Test.
VIII	3	4	Counters and timers – Serial Communications using MAX 232	"	"	"
IX	3	4	Interfacing 8051 with ADC – DAC	"	"	"
X	3	4	Led display – Hex keyboard	"	"	"
XI	3	5	Working principle of sensors/ Transducers – Light Sensor, Heat Sensor	PPT	"	"
XII	3	5	Compiling IDE software Bluetooth Controller	"	Net source	"
XIII	3	5	IoT applications. Morning alarm – Garden lights	"	"	"
XIV	3	5	Heat activated fire alarm – Intruder alarm using IR.	"	"	"
XV	3	5	Android mobile to use keypad	"		

Academic Year : 2022–2023
Class : I M.Sc.
Subject : Electronic devices & Applications
Hours / Week : 5
Credits : 4

Semester : I
Class Code :
Subject Code : PEPHA20
Total Hours : 75
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
I	5	I	Multigate transistors – Need, Structure, Fabrication, working, IV Characteristics. Logic gates	PPT	NPTEL	Slip test, Assignments, CA exam,
II	5	I	SET – Construction – Operation – Principle – Quantum dots.	"		"
III	5	I	IV Characteristics – Design of logic gates using SET – Advantages	"		"
IV	5	II	Light units – LED, Operation, Construction – Characteristics, LCD	"	B.L. Theraja	"
V	5	II	photo conductive cells – photo diodes, Solar cells – Operation.	"	"	"
VI	5	II	photo transistors – Characteristics. photo FET – Opto couplers – Laser diode.		"	"

VII	5	III	555 Timer – Description – Mono stable operation	Chalk & Board	RoyChaudhry	Slip test Assignment	etc
VIII	5	III	Astable operation – Schmitt trigger phase locked loops.	"	"	"	
IX	5	III	Voltage to Frequency converter Analog phase detector.	PPT	"	"	
X	5	IV	Instrumentation amplifier – V to I and I to V Converter.	PPT	"	"	
XI	5	IV	Phase shift & wein bridge Oscillators.	"	"	"	
XII	5	IV	Wave generators – LPF, HPF, and BPF.	"	"	"	
XIII	5	V	4 bit Binary adder/ subtractor Mux and DMUX.	"	Vijayendran	"	
XIV	5	V	Counters – BCD – parallel Counters – D/A Converters.	"	"	"	
XV	5	V	A/D Converters – 4 types.	"	"	"	

Dr. S. Reena Devi

LESSON PLAN

Academic Year : 2021 – 2022 and 2022 – 2023
Class : II M.Sc, PHYSICS.
Subject : Numerical Methods and C-Programming
Hours / Week : 2
Credits :

Semester : III
Class Code : PEPHE20
Subject Code :
Total Hours : 30
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	2	III	Programming in C - Introduction – Basic Structure of C – Programming	Online PPT	Programming in ANCI C by E. Balaguruswamy	
2	2	III	Character set - keywords	Online – PPT	E. Balaguruswamy E-tutorials.	
3	2	III	Identifier - variables	online PPT.	E. Balaguruswamy E-tutorials You Tube Videos	
4	2	III	Assigning values to the variables	Chalk and talk.	E. Balaguruswamy	
5	2	III	Symbolic Constants	PPT and Chalk and talk.	E. Balaguruswamy	
6	2	IV	operators, arrays and strings. Operators – Arithmetic, relational logical.	PPT and Chalk and talk	E. Balaguruswamy	

7	2	IV	Assignment, increment, decrement, conditional and special type conversion in Expression	Chalk and talk	E Balaguruswamy	
8	2	IV	Arrays, Multidimensional arrays, initialising two dimensional arrays.	PPT, Chalk and talk.	E. Balaguruswamy	
9	2	IV	Initialising string variables.	Chalk and talk.	E. Balaguruswamy	
10	2	IV	Reading and writing strings on the Arithmetic operators, on strings.	PPT.	E. Balaguruswamy	
11	2	V	Simple programmes. User defined functions and their needs.	PPT. Chalk and talk.	E Yeltored Balaguruswamy	
12	2	V	Multifunction Programm, calling functions, categories of functions.	PPT	E. Balaguruswamy	
13	2	V	Returns values and their types	Chalk and talk	E. Balaguruswamy	
14	2	V	Multiplication - Diagonalisation and inversion, Lagrangian interpolation.	PPT	You tube videos, E Balaguruswamy	
15	2	V	Simpson's Rule - Euler method Runge - Kutta Method.	PPT	E Balaguruswamy	

LESSON PLAN

Academic Year : 2021 - 2022 and 2022 - 2023
Class : I M.Sc Physics.
Subject : Mathematical Physics - I
Hours / Week : 4
Credits :

Semester : I
Class Code :
Subject Code : PC PHA19
Total Hours : 60
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	4	I	Vector Analysis : Vector field - Orthogonal Curvilinear co-ordinates - Expression for Grad, div, Curl, Laplacian	online - PPT	mathematical physics by satyaprakash.	
2	4	I	Spherical and cylindrical co-ordinate system - Expression for Grad, div, Laplacian and curl.	online - PPT.	"	
3	4	I	Stoke's theorem - simple applications - Gauss theorem - simple applications.	online - PPT	"	
4	4	I	Linear vector space, Linear independance of vectors - Basis and Expansion theorem	online - PPT	"	
5	4	I	Inner product and Unitary vector spaces - orthonormal sets.	Chalk and talk.	Linear Algebra, M.P by H.K. Dass	
6	4	I	Gram Schmidt's orthogonalisation method - Schwarz inequality - Completeness.	chalk and talk.	M.P by " Satya prakash.	

LESSON PLAN

Academic Year : 2021 - 2022 and 2022 - 2023
Class : I M.Sc Physics.
Subject : Mathematical Physics - I
Hours / Week : 4
Credits :

Semester : I
Class Code :
Subject Code : PC PHA19
Total Hours : 60
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	4	I	Vector Analysis : Vector field - Orthogonal Curvilinear co-ordinates - Expression for Grad, div, Curl, Laplace	Online - PPT	mathematical Physics by Satyaprakash.	
2	4	I	Spherical and cylindrical co-ordinate system - Expression for Grad, div, Laplacian and curl.	Online - PPT.	"	
3	4	I	Stoke's theorem - simple applications - Gauss theorem - simple applications.	Online - PPT	"	
4	4	I	Linear vector space, Linear independance of vectors - Basis and Expansion theorem	Online - PPT	"	
5	4	I	Inner product and Unitary vector spaces - Orthonormal sets.	Chalk and talk.	Linear Algebra, M.P by H.K. Dass	
6	4	I	Gram Schmidt's orthonormalisation method - Schwarz inequality - Completeness.	Chalk and talk.	M.P by " Satya Prakash.	

7	4	III	Differential equations: Order and degree of differential eqns. Solution for first order D.E by variables.	Chalk and talk, PPT	M.P by Satyaprakash & H.K. Dass	
8	4	III	Solution of Linear D.E of first order by the method of integrating factor – problems.	Chalk and talk.	M.P by B.D. Gupta.	
9	4	III	Solution of first order D.E reducible to linear form (Bernoulli's equation) – problems.	Chalk and talk.	M.P by Satyaprakash	
10	4	III	Solution of second order D.E with constant Co-efficients – problems.	PPT and Black Board.	" "	
11	4	III	Power series solution, Frobenius method – Linear independance of solution, wronskian method – problems	Chalk and talk.	"	
12	4	V	Green's function, Dirac delta fn. properties, problems, fourier transform of delta fn. – Laplace transform of Dealta fn.	PPT & Black Board	"	
13	4	V	Green function for one dimensional case – Evaluation – boundary value problems – Eigen function – Expansion of Green fn	Black Board	"	
14	4	V	Poisson's eqn, and Solution – Green's function for three dimensional Helmholtz equation.	PPT Chalk and talk.	"	
15	4	V	Green's function for Quantum mechanical scattering problem.	Chalk and talk	"	

LESSON PLAN

Academic Year : 2021 - 2022 and 2022 - 2023
Class : I M.Sc
Subject : Statistical Mechanics.
Hours / Week : 3
Credits :

Semester : I
Class Code :
Subject Code : PCPHC20.
Total Hours : 45
Total Marks : 100

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	3	I	Thermodynamics. - Introduction - Thermodynamic potentials, Phase equilibrium.	Online PPT	Statistical Mechanics by Satya Prakash and Gupta Kumar Sharma	
2	3	I	Gibb's phase rule, Entropy of mixing and Gibb's paradox.	Online PPT		
3	3	I	Phase transition and Ehrenfest's Classification	»	»	
4	3	I	Landau theory of phase transition	»	»	
5	3	I	Critical indicants, - Scale transformation and dimensional analysis.	»	»	
6	3	IV	Fermi Dirac distribution - Equation of states,	Chalk and talk.	»	

7	3	IV	Free electron gas in metals	Chalk and talk	Statistical mechanics by Satwya Prakash	
8	3	IV	Heat capacity	»	»	
9	3	IV	Pauli's paramagnetism	»	»	
10	3	IV	Thermionic emission.	PPT	»	
11	3	IV	Superconductivity	Chalk and talk	»	
12	3	V	Ising model - fluctuation and Transport phenomena.	»	»	
13	3	V	Brownian motion :- Fluctuation	»	»	
14	3	V	Langevin's theory, Dissipation theorem	»	»	
15	3	V	Folcker Planck equation	PPT	»	

LESSON PLAN

Academic Year : 2022 - 2023
Class : II M.Sc.,
Subject : Condensed Matter Physics
Hours / Week : 3
Credits : 4

Semester : IV
Class Code :
Subject Code : PCPHN20
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	3	I	Crystal Physics - Types of lattices, miller indices, simple crystal structures, crystal diffraction, Bragg's law	Chalk and talk	Solid State physics by S.O. Pillai and	
2	3	I	Reciprocal lattice, (SCC, BCC, FCC), Laue equation, Structural factor, Atomic form factor	Chalk and talk, PPT	Gupta kumar Sharma.	
3	3	I	Types of crystal binding, cohesive energy of ionic crystals, Madelung constant, types of crystal binding	Chalk and talk	"	
4	3	II	Monoatomic lattices, lattice with two atoms per primitive cell, First Brillouin zone.	"	Solid State physics by C.L Arora	
5	3	II	Group and phase velocity, Quantisation of lattice vibrations Phonon momentum, Inelastic	"	"	
6	3	II	Scattering by phonons, Debye's theory of lattice heat capacity Einstein model and Debye's model	"	"	

7	3	II	of specific heat, Thermal expansion, Thermal conductivity, Umklapp process.	Chalk and talk	Solid State Physics by S.O. Pillai	
8	3	III	Theory of metals and Semiconductors, Free electron gas in three dimensions, Electronic heat capacity	"	"	
9	3	III	Wiedemann Franz law, Hall effect. Bloch theorem, Kronig penny model, Band theory of metals and semiconductors	"	"	
10	3	III	Semiconductors Density of States, Intrinsic and extrinsic carrier concentration, mobility, Impurity	PPT	"	
11	3	IV	conductivity, Fermi surfaces and construction, De Has Van Alphen effect.	Chalk and talk	SSP by Michel.	
12	3	III	Construction of fermi surface explanation, problems.	"	"	

LESSON PLAN

Academic Year : 2022 – 2023
Class : I M.Sc
Subject : Mathematical Physics – II
Hours / Week : 4
Credits : 4

Semester : II
Class Code :
Subject Code : PCPHD20.
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	4	I	Complex variables. Analytic functions Cauchy - Riemann conditions, single and multivalued functions.	Chalk and talk	Mathematical physics by Satya Prakash	
2	4	I	Cauchy's Integral theorem and formula, Taylor's theorem and Laurent's theorem. Poles and Residues	"	M. P by H. K. Dass	
3	4	I	Cauchy's Residue theorem. Application to evaluation of definite integrals of Round Unit Circle and an	"	"	
4	4	IV	infinite Semi circle. Probability theory, Probability density and Probability	"	"	
5	4	IV	distributions, Binomial, Poisson's and Normal distributions Moments Generating function.	"	"	
6	4	IV	Discrete distributions Casual distribution.	"	"	

7	4	IV	Uniform distribution, Cauchy continuous distribution.	Chalk and talk	M. P. by H. K. Dass	
8	4	V	Group theory. Definition of groups, subgroups and conjugate classes.	"	M. P. by Satyaprakash	
9	4	V	Invariant subgroup, Homomorphism and isomorphism between groups.	"	"	
10	4	V	Point groups, Representation of point groups, Reducible representation	"	"	
11	4	V	Irreducible representation, Schur's lemma, Great orthogonality theorem.	"	"	
12	4	V	Character table, construction of character table for C3v and C4v group.	"	"	
13	4	V	Continuous and Lie groups, Symmetry group of Schrodinger equation.	"	"	
14	4	V	Two dimensional rotational group (R+2)	"	"	
15	4	V	Three dimensional rotational group (R+3)	"		

LESSON PLAN

Academic Year : 2022 – 2023
Class : III B.Sc Physics
Subject : Solid State Physics
Hours / Week : 2
Credits : 5

Semester : VI
Class Code :
Subject Code : UEPHC20
Total Hours :
Total Marks :

Proposed Week	No. of Hrs	Unit	Topics to be Covered	Teaching Methodology	Learning Resources	Methods of Evaluation
1	2	II	Band theory of Solids and Defects, Energy band in solids Electron in a Periodic Potential	Chalk and talk	Modern Physics by R. Murugeshan	
2	2	II	Brillouin zone, Brillouin zones construction, Crystal imperfection	"	SSP by C.L. Arora	
3	2	II	Point defects, line defects, surface defects	"	Modern Physics by R. Murugesan	
4	2	II	Effects of crystal imperfection.	"	"	
5	2	IV	Bonding in crystals and lattice Vibrations, Types of bond in crystals.	"	"	
6	2	IV	Ionic, covalent, metallic, vanderwaal's and Hydrogen bonding.	"	SSP by Gupta Kumar	

7	2	IV	Phonons of mono atomic one dimensional lattice	Chalk and talk	SSP by C.L. Arora	
8	2	IV	Specific heat of solids Atomic heat, Dulong and Petit's law.	"	Modern Physics by R. Murugeshan	
9	2	IV	Einstein theory of ~~spe~~ specific heat.	"	"	
10	2	IV	Debye's theory of specific heat	"	"	
11	2	IV	Cohesive energy of ionic crystals.	"	"	
12	2	V	Super conductivity, introduction properties of semiconductor.	"	"	
13	2	V	Type I and Type II Super conductors	"	"	
14	2	V	BCS theory of Super Conductors. Cooper pair Electron lattice - electron interaction	"	"	
15	2	V		"	"	

LESSON PLAN