Punjab Association's

ANNA ADARSH COLLEGE FOR WOMEN

(Affiliated to University of Madras)

ANNA NAGAR, CHENNAI 600040

CRITERION 1

1.1.1 Curriculum Planning and Implementation

LESSON PLAN

PHYSICS

Name of the staff: Dr. N. Mahalakshmi **Total Hours: 60 hours**
Name of the subject: Basic Electronic **Year/ Semester: III yr/ 5 semeste**
Subject code: SAR5D

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
I	**semiconductor** Introduction, types of conductors, atom model, energy levels,band gap, forbidden energy gap, valance band, conduction band, pure and impure semiconductor, law of mass action, Fermi level, junction diode, formation of junction, depletion region, characteristics of PN junction diode.	12	Online g-meet & virtual white board tab GCR assignments	http://www.nptelvideos.in/2012/12/electronics.html
II	**Transistor amplifiers** Introduction , difference between transistor and diode. Advantages over each other. Modes OF operation,CE,CB,CC,characteristics of CE, analysis of input,output characteristics, gain,collector current, beta amplification factor, Characters of CB mode, input, output character, current amplification factor, relation between amplification factors, base current, amplification factor, hybrid parameters, two port representation of transistor, expression for current gain, voltage . gain, input impedance, output impedance and power gain. Types of amplifier: transformer coupled, RC Coupled. Load line in amplifiers, operating point, frequency response,low frequent,mid frequency,high frequency, class A,Class B,class C Amplifiers, push pull amplifier.	12	Online g-meet & virtual white board tab GCR assignments	http://www.nptelvideos.in/2012/12/electronics.html

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III	**feedback amplifiers:** Feedback amplifiers, positive feedback ,negative feedback, Emitter followed,Feedback in amplifiers, effect of negative feedback - concept of feedback. Barkhuesen condition - oscillators - phase shift and Wien's bridge oscillators - expression for frequency of oscillation and condition for oscillation in each case.	12	Online g-meet & virtual white board tab GCR assignments	http://www.nptelvideos.in/2012/12/electronics.html
IV	**Wave shaping circuits and multivibrators** Clipping and clamping circuits - biased clipper - integrating and differentiating circuits - RC time constant - Multivibrators - astable, monostable and bistable multivibrator - using transistors.	12	Online g-meet & virtual white board tab GCR assignments	http://www.nptelvideos.in/2012/12/electronics.html
V	**Special semiconductor devices and applications** Field effect transistor (FET) - characteristics - FET amplifier- Unijunction transistor (UJT) - characteristics - saw tooth generator - VVR action - relaxation oscillator - frequency of oscillation. SCR characteristics - SCR as a switch - SCR rectifier.	12	Online g-meet & virtual white board tab GCR assignments	http://www.nptelvideos.in/2012/12/electronics.html

Name of the subject: Numerical Methods **Total Hours: 12 hours**
Subject code: SER5A **Year/ Semester: 5 semester**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
IV	Curve Fitting Principles of least squares - fitting a straight line - linear regression - fitting an exponential curve	12	Online g-meet & virtual white board tab GCR assignments	-

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Name of the staff: Dr. A.SUVITHA **Total Hours: 60 hours**
Name of the subject: NUCLEAR PHYSICS & PARTICLE PHYSICS **Year/ Semester: III yr/ V semester**
Subject code: SAR5B

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
I	**General Properties of Nuclei :** Nuclear size, charge, mass determination of nuclear radius, mirror nucleus method mass defect and binding energy packing fraction nuclear spin, magnetic dipole moment, electric quadrupole moment nuclear models-liquid drop model Weizacker semi empirical mass formula shell model and magic numbers, collective model Nuclear forces meson theory of nuclear force (qualitative).	12	Virtual white board, live online classes, experiments with presentations. Posting theory in GCR.	http://hyperphysics.phy-astr.gsu.edu/hbase/Nuclear/elequad.html https://meet.google.com/sou-hxwv-dta https://meet.google.com/otb-isjw-ciq https://meet.google.com/cwo-scfw-zqq?hs=151 https://meet.google.com/sqo-tvox-bar?hs=151
II	**Radioactivity:** Natural radioactivity-law of disintegration half life and mean life period-units of radioactivity transient and secular equilibrium-radiocarbon datingage of earth - alpha rays-characteristics-Geiger Nuttal law α-ray spectra-Gamow's theory of α-decay (qualitative study) beta rays-characteristics-beta ray spectra Neutrino ypothesisviolation of parity conservation Experimental verification with Co60-gamma rays and internal conversion-nuclear isomerism.	12	Virtual white board, classroom method, shared videos from youtube.	https://socratic.org/questions/what-are-themain-differences-in-alpha-decay-and-betadecay https://meet.google.com/pec-rzfe-yhq meet.google.com/ziy-mapt-gvu https://meet.google.com/hkd-gjgx-ptr https://meet.google.com/xko-ezrr-qnu
III	Radiation Detectors & Particle Accelerators: Ionisation chamber- G.M.Counter-quenching and resolving time Scintillation counter-photo multiplier tube thermoluminescence thermoluminescence dosimetry (TLD) Linear accelerator-cyclotronsynchrocyclotron, betatron	12	Virtual white board, live online classes, experiments with presentations. Posting theory in GCR. **GCR-CLASS CODE: ozsfkqi**	**https://meet.google.com/ary-zmhb-hpd https://meet.google.com/jhw-esyk-pnd** https://www.youtube.com/watch?v L5zhpLfnqGc

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IV	Nuclear Reactions : Conservation laws-nuclear reaction Kinematics Q-valuethreshold energy - artificial radioactivity-radioisotopes and its uses Classification of neutrons-nuclear fission-chain reaction - critical mass and size Nuclear reactor-breeder reactor - transuranic elements-nuclear fusion Thermonuclear reactionssources of stellar energy.	12	Virtual white board, classroom method, shared videos from youtube. **GCR-CLASS CODE: ozsfkqi**	https://learnfatafat.com/chain-reaction/
V	Elementary Particles : Classification of elementary particles fundamental interaction Elementary particle quantum numbers - isospin and strangeness Conservation laws and symmetry-basic ideas about quark Quark model.	12	Virtual white board, classroom method, shared notes from D.C.Tayal book. **GCR-CLASS CODE: ozsfkqi**	-

SUBJECT: NUMERICAL METHODS **SEMESTER: V**
SUBJECT CODE: SER5A **CLASS: III B.Sc., PHYSICS**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
V	Numerical Integration Trapezoidal Rule - Simpson's 1/3 rule and 3/8 rule Applications - Weddle's rule	12	Virtual white board, classroom method, shared problems from Venkatraman.	-

SUBJECT: PROPERTIES OF MATTER & SOUND **SEMESTER: I**
SUBJECT CODE: SR21A **CLASS: I B.Sc., PHYSICS SUBJECT**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
IV	Waves And Oscillations: Simple Harmonic Motion Differential equation of SHM, Graphical representation of SHM Composition of two S.H.M in a straight line At right angles, Lissajous's figures Free, Damped, Forced vibrations Resonance and Sharpness of resonance. Laws of transverse vibration of strings Sonometer-Determination of AC frequency using sonometer	12	Virtual white board, classroom method, shared notes in GCR. **GCR-CLASS CODE: kemmd74**	-

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Name of the staff: **Dr.M.JAYANTHI** TOTAL HOURS:**60**
Name of the subject: **SOLID STATE PHYSICS** YEAR/SEMESTER:**III /V**
Subject code: **SAR5C**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
1	**Crystal Structure** Crystal lattice – primitive and unit cell – seven classes of crystal – Bravais Lattice – Miller Indices – Structure of crystals – simple cubic, hexagonal close packed structure, face centred cubic structure, body centred cubic structure – Sodium chloride structure, Zinc Blende structure, Diamond structure.	12	**GCR-CLASS CODE:** 5idhvls **LIVEBOARD**	https://meet.google.com/sou-hxwv-dta meet.google.com/kms-ruvu-svk meet.google.com/qdw-zhno-jha
2	**Defects in Solids** X ray diffraction – Bragg's law in one dimension – Experimental methods – Laue Method, powder crystal method and rotating crystal method. Defects in solids - Point defects - Frenkel and schottky defects - Equilibrium concentrations - Line defects - Edge dislocation and screw dislocation - Surface defects - Grain boundary - Effects of Crystal imperfections.	12	**GCR-CLASS CODE:** 5idhvls **LIVEBOARD**	https://meet.google.com/tjf-ggem-dqy http://meet.google.com/ziy-mapt-gvu
3	**Chemical Bonds and Crystallography** Interatomic forces - Different types of chemical bonds - Ionic bond - Cohesive energy of ionic Crystals and Madelung constant - Covalent bond - Metallic bond - Van der Waal's bond - Hydrogen bond. Superconductivity - General properties - Type I and II Superconductors - Meissner effect - BCS theory - applications of super conductors.	12	**GCR-CLASS CODE:**5idhvls **LIVEBOARD**	https://meet.google.com/otb-isjw-ciq meet.google.com/hsh-evfj-wvj
4	**Dielectric Properties** Dielectric materials - Polarization, susceptibility and dielectric constant - Local field or internal field - Clausius - Mossoti relation - Sources of polarizability - Electronic polarizability - Ionic polarizability - Orientational polarizability - Frequency and temperature effects on polarization - Dielectric breakdown – Properties of different types of insulating materials.	12	**GCR-CLASS CODE:** 5idhvls **BLACK BOARD AND CHALK**	

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5	**Magnetic Properties** Different types of magnetic materials - classical theory of diamagnetism (Langevin theory) - Langevin theory of paramagnetism - Weiss theory of paramagnetism - Heisenberg interpretation on internal field and quantum theory of ferromagnetism - Antiferromagnetism - Hard and soft magnetic materials.	12	**GCR-CLASS CODE:**5idhvls **LIVEBOARD** BLACK BOARD AND CHALK	

Name of the subject: **MATHEMATICAL METHODS IN PHYSICS**
YEAR/SEMESTER: **II B.Sc PHYSICS/ II sem**
Subject code:

TOTAL HOURS:**24**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
IV	**COMPLEX VARIABLES** Basics of Complex Numbers and their Graphical Representation - Euler's Formula, De-Moivre's Theorem - Functions of Complex Variables - Limit, Continuity and Differentiability - Analytic Function -Definition - Cauchy-Riemann Conditions - Examples of Analytic Functions (Analyticity) - Cauchy-Riemann Conditions in Polar Form	12	**GCR-CLASS CODE:qamcxr5** **LIVE BOARD** Blackboard and chalk	**https://meet.google.com/ohq-irvn-pyd** **meet.google.com/hrd-xcgn-gni** **meet.google.com/qth-hnuz-oos** **meet.google.com/wtj-cyra-gzx**
V	**FOURIER SERIES** : Fourier Series in the interval ($-\pi$ to π) - Definition – Dirichlet's Conditions (Statement Only) - Determination of Fourier Coefficients -Even and Odd Functions and their Fourier expansions. Sine and Cosine Periodic Functions - Simple Problems in Fourier Series in the interval ($-\pi$ to π) - Applications of Fourier series - Half Wave Rectifier and Saw Tooth Wave.	12	**GCR-CLASS CODE:qamcxr5** **Blackboard and chalk**	**meet.google.com/hzr-pwea-cxq**

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Name of the staff: **Dr. V. Shreevidhyaa Suressh** TOTAL HOURS:**60**

Name of the subject: **Electricity and Electromagnetism**

YEAR/SEMESTER: **III B.Sc PHYSICS/ V SEMESTER**

Subject code: **SAR5E**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
I	**Chemical effects of electric current:** Faraday's laws of electrolysis - ionic velocities and mobilities – calculation and experimental determination-transport number.Thermoelectricity – Peltier effect and Thomson effect – experimental determination of Peltier and Thomson coefficients.Application of thermodynamics to thermocouple-Thermoelectric diagram and uses.	12	Virtual online class - Link for the class is posted in GCR. Notes is posted In GCR. Assignment on the topic was given.	https://classroom.google.com/c/Mzc2NjU3NzY1Mjky/a/MzgzNzcxMDEwNzUy/details https://drive.google.com/file/dmM1i6HhwO4IAFlkLfIf5Rciview?usp=drive_web&authuse https://www.youtube.com/wa0137M2sx_0 https://classroom.google.com/c/Mzc2NjU3NzY1Mjky/a/Mzg2NDg0MzM1MzE5/details https://classroom.google.com/c/Mzc2NjU3NzY1Mjky/a/Mzg2ODUxMjkwMTg5/details https://meet.google.com/gyg-pdiv-eog https://meet.google.com/cdc-qvre-ugy https://meet.google.com/vcm-kubm-tcb https://meet.google.com/uwz-dmcf-tcn https://meet.google.com/cdg-seot-iyi https://meet.google.com/dgb-mgwq-opg https://meet.google.com/eey-azdn-stb
II	**DC Circuits:** Growth and decay of current in circuit containing resistance and inductance and resistance and capacitor.Growth and decay of charge in LCR circuit – conditions for discharge to be oscillatory.Network Analysis – Thevenin's and Norton's theorems.	12	Virtual on-line class-Link for the class is posted in GCR. Notes is posted In GCR. Assignment on the topic was given.	https://meet.google.com/phv-onup-mgp https://meet.google.com/kbr-urpo-ntk https://meet.google.com/obk-grjy-jpp https://meet.google.com/xfb-bzuv-oua https://meet.google.com/sas-dmjt-zwo https://meet.google.com/bfn-weyh-kgq https://meet.google.com/rzk-uuyz-ggh

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				https://meet.google.com/unt-nvqs-mwx https://meet.google.com/wqn-ahvm-aar https://classroom.google.com/c/Mzc2NjU3NzY1Mjky/a/Mzk2NzY4Nzk5MzY5/details
III	**AC Circuits:** AC voltage and current – Power Factor and current values in AC circuit-LCR circuit – series and parallel resonant circuits. AC motors-Star and Delta connection – single phase and three phase-Electric fuses – circuit breakers.	12	Virtual online class - Link for the class is posted in GCR. Notes is posted In GCR.	https://meet.google.com/rui-hafk-rsn https://meet.google.com/uqd-bbdr-hdg https://meet.google.com/drf-prif-czo https://meet.google.com/ugr-bcyw-ghi https://meet.google.com/xmj-omfw-mzi https://meet.google.com/jaz-unvd-hyq https://meet.google.com/pvy-behp-ymp https://meet.google.com/dyv-odza-dep https://meet.google.com/rgm-snyx-bmh https://meet.google.com/ixy-qtxv-eve
IV	**Magnetic Effect of Electric Current:** Biot and Savart's law-Magnetic field intensity due to a solenoid carrying current – effect of iron core in a solenoid. Helmholtz galvanometer-Moving coil ballistic galvanometer – theory – damping correction.Determination of absolute capacity of a condenser using BG.	12	Virtual online class - Link for the class is posted in GCR. Referred to book Electricity and Magnetism by R. Murugesan. Also used traditional blackboard and chalk teaching method to derive and explain the working of complicated circuits.	Traditional method of classroom teaching was adopted and offline test, seminar and assignment were given. https://meet.google.com/hto-eaox-jny https://meet.google.com/put-dcoa-xhx https://meet.google.com/skp-nmsm-rkm

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Vineetha Soares

V	**Electromagnetic Induction and its Applications:** Faraday's laws of electromagnetic induction – inductor and inductance. Determination of self inductance of a coil using Anderson method. Mutual inductance – experimental determination of absolute mutual inductance. Coefficient of coupling. Earth inductor – measurement of horizontal and vertical component of earth's magnetic field. Calibration of BG. Induction coil and its uses	12	Referred to book Electricity and Magnetism by R Murugesan. Also used traditional blackboard and chalk teaching method to derive and explain the working of complicated circuits.	Traditional method of classroom teaching was adopted and offline test, seminar and assignments were given. Also model exam was conducted offline and internal marks were allotted.

Name of the subject: **Mathematical Methods in Physics**

TOTAL HOURS: 18

Subject Code: **SR23A**

YEAR/SEMESTER: **II YR/III SEM**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
I	VECTOR CALCULUS Scalar and Vector fields – Gradient of a scalar function - Divergence of a vector function - Curl – Line Integral, Surface Integral and Volume Integral (Simple Problems) – Gauss Divergence Theorem – Stoke's Theorem and Green's Theorem (Statement and Proof) - Spherical polar coordinates – Expressions for Gradient, Divergence, Curl and Laplacian Operator in Cartesian and Spherical Polar Coordinates	12	Referred to Mathematical Physics book by SathyaPrakash and Mathematical Physics by B.D.Gupta. Virtual online class. Link for the class is posted in GCR. Notes is also posted in GCR.	https://classroom.google.com/c/Mzc2NTUyMTg2NDc5/p/Mzc5MDgxODU1NzU1/details https://classroom.google.com/c/Mzc2NTUyMTg2NDc5/a/Mzg2NDgzMjE1NDAz/details https://classroom.google.com/c/Mzc2NTUyMTg2NDc5/a/NDAzNzA2OTkxODU0/details https://meet.google.com/pcq-msvg-auv
II	**Special Functions:** Series solution for Hermite, Bessel and Legendre Differential equations.	6	Referred to Mathematical Physics book by SathyaPrakash and Mathematical Physics by B.D.Gupta.	https://classroom.google.com/c/Mzc2NTUyMTg2NDc5/a/Mzg1MDY4ODE0NDI4/details https://classroom.google.com/c/Mzc2NTUyMTg2NDc5/p/Mzg1NTk0NTM2MTYx/details https://en.wikipedia.org/wiki/Spherical_coordinate_system

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Name of the staff:**Mrs.M.Sheeba Gnanaselvi** Total Hours: 18
Name of the subject: Optics and spectroscopy Year: II phy/ Semester:III
Subject code: SAR3A

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
UNIT III	**MATRICES**:Special Types of Matrices - Symmetric and Skew-symmetric Matrices -Hermitian and Skew-Hermitian Matrices - Orthogonal Matrices - Unitary Matrices -Properties - Characteristics Equation - Determination of Eigen values and Eigen vectors - Properties - Statement and Proof of Cayley - Hamilton Theorem - Simple Problems - Inverse of Matrix by CH Theorem - Diagonalization of 2x2 Real Symmetric Matrices.	12	**White board and marker** Online virtual class thro ugh gmeet ,link is posted in GCR	https://meet.google.com/vra-etif-swk **https://meet.google.com/djk-ncnf-ros https://meet.google.com/ajb-ykms-amg https://meet.google.com/thr-rjic-qhdd** https://meet.google.com/hsq-miqv-ojh https://meet.google.com/ipz-izdi-urx
UNIT II	**SPECIAL FUNCTIONS :**Beta and Gamma Functions - Definitions - Symmetry Property of Beta function - Evaluation of Beta function - Transformation of Beta function - Evaluation of Gamma Function - The value of 1/2 - Transformations of Gamma function (Other forms) - Relation between Beta and Gamma functions - Simple Problems in beta and gamma functions	6	**White board and marker**	**https://meet.google.com/gym-dkoc-mfm** **https://meet.google.com/mvi-qvji-sxa**

Name of the subject:Allied Physics -I Total Hours: 48
Subject code: SBARA Year II chem/ Semester: III

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
I	**Properties of Matter :**Young's modulus – Rigidity modulus – Bulk modulus – Poisson's ratio (definition alone) – Bending of beams – Expression for bending moment – determination of young's modulus – uniform and non-uniform bending. Expression for Couple per unit twist – work done in twisting a wire – Torsional oscillations of a body– Rigidity modulus of a wire and M.I. of a disc by torsion pendulum.	12	**White board with marker**	https://www.youtube.com/watch?v=uPbzhxYTioM https://www.youtube.com/watch?v=jxstE6A_CYQ https://www.youtube.com/watch?v=6G_hfyb-Zj4 https://www.youtube.com/watch?v=f8MFMbOSDS

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II	**Viscosity :** Viscosity – Viscous force – Co-efficient of viscosity – units and dimensions – Poiseuille's formula for co-efficient of viscosity of a liquid – determination of co-efficient of viscosity using burette and comparison of Viscosities - Bernoulli's theorem – Statement and proof – Venturimeter – Pitot tube.	12	**White board with marker**	https://www.youtube.com/watch?v=UVcyea3ZH54 https://www.youtube.com/watch?v=seElLKW8XVg https://youtu.be/zMzqiAuOSz0 https://www.youtube.com/watch?v=UNBWI6MV_IY
III	**Conduction, Convection and Radiation** :Specific heat capacity of solids and liquids – Dulong and Petit's law – Newton's law of cooling – Specific heat capacity of a liquid by cooling – thermal conduction – coefficient of thermal conductivity by Lee's disc method. Convention process – Lapse rate – green house effect – Black body radiation – Planck's radiation law – Rayleigh Jean's law, Wien's displacement law – Stefan's law of radiation. (No derivations).	12	**hite board with marker**	https://www.youtube.com/watch?v=kNZi12OV9Xc https://www.youtube.com/watch?v=HpCvWuvCUoA
V	**Optics:** Interference – conditions for interference maxima and minima – Air wedge – thickness of a thin wire – Newton's rings – determination of wavelength using Newton's rings. Diffraction – Difference between diffraction and interference – Theory of transmission grating – normal incidence – optical activity – Biot's laws – Specific rotatory power – determination of specific rotatory power using Laurent's half shade polarimeter.	12	**White board with marker**	https://www.youtube.com/watch?v=EUA8KYv-je4 https://www.youtube.com/watch?v=zx07PShjJmkk https://www.youtube.com/watch?v=1LdFePZHAyY https://www.youtube.com/watch?v=mFE1EBsPEas https://www.youtube.com/watch?v=XuXUtGN928U

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Name of the staff: **Mrs.B.Gayatri**
Name of the subject: properties of matter
Subject code: SR21A

Total Hours: 36
Year/ Semester: I

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
UNIT 1	**ELASTICITY** Hooke's Law- Stress-Strain diagram- Elastic constants- Poisson's ratio- Relation between elastic constants and Poisson's ratio Work done in stretching and twisting a wire- Twisting couple on a cylinder- Torsional pendulum (with and without masses)	12	**White board with marker** CLASS ROOM CODE: 54jbrfr	**Link code: amkwdebrpa**
UNIT II	**BENDING OF BEAMS** Cantilever-Expression for bending moment- Expression for depression at the loaded end of the cantilever- Oscillations of a cantilever- Expression for Time period – Experiment to find Young's Modulus- NonUniform bending Experiment to find Young's Modulus by Koenig's method- Uniform bending- Expression for elevationExperiment to determine Young's Modulus using microscope	12	**White board with marker** Class Room code: 54jbrfr	-
UNIT III	**FLUID DYNAMICS** **Surface tension:** Definition- molecular forces- Excess pressure over curved surface-Application to spherical and cylindrical drops and bubbles-Variation of surface tension with temperature- Jaegar's method. **Viscosity:** Definition – treamline and turbulent motion- Rate of flow of liquid in a capillary tube- Poiseuille's formula- correction- Terminal velocity and Stoke's formula- Variationof viscosity of a liquid with temperature	12	**White board with marker**	-
UNIT V	Acoustic intensity- Factors affecting the acoustic of Buildings. Ultrasonic waves- production of ultrasonic waves- Piezoelectric crystal method- Ultrasonic waves- Magnetostriction effect- Application of Ultrasonic waves.	12	**White board with marker**	-

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Name of the staff: Mrs.B.Gayatri **Total Hours:36**
Name of the subject: Numerical methods **Year III Phy/ Semester: v**
Subject code: SER5A

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
I	Simultaneous Linear Algebric Equations: Method of Triangularisation- Gauss Elimination method- Inverse of a Matrix Gauss- Jordan method.	12	**White board with marker** Class Room code: unooafs	**https://youtu.be/35VTS1L4U7U gmeet code:diiiwfricrotbisjwciq , ieetfjdjpyvkhithbrhv, vaumznnzwwcdgseotiyr**
II	Numerical Solution of Algebric, Transcendental and differential equation: Bisection method- Regula falsi method- Newton-Raphson method Horner's method-Solution of ordinary dfferential equation- Euler's method.	12	**White board with marker** Class Room code: unooafs	https://youtu.be/SKL4I-BkQ9k gmeet code:tirdcwpibg,qybsohqjbn,ppoagtorgf,znzsqxdtip,wfyghmropj,ruusedekzs,ytubwdajct,tvkewhvffp,ffojcgbwicmndasraist
III	**Interpolation:** Finite differences operators- D $\Delta\nabla\epsilon\gamma\beta$- relations between operators.λ Linear interpolation - introduction Interpolation with equal intervalsNewton forward interpolation formula Newton backward interpolation formula.	12	**White board with marker**	-

Name of the subject: Allied Physics-I **Total Hours: 12**
Semester: III **Year II Chemistry**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit 4	UNIT IV: Thermodynamics Zeroth and I Law of Thermodynamics – II law of Thermodynamics – Carnot's engine and Carnot's cycle – Efficiency of a Carnot's Engine – Entropy – Change in Entropy in Reversible and Irreversible Process – Change in entropy of a perfect gas – Change in Entropy when Ice is converted into steam.	12	**White board with marker** Class Room code: wd5ekat	gmeet code: cjzpmyrdvc itguajeyog

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Name of the staff: Dr. N. Mahalakshmi **Total Hours: 60 hours**

Name of the subject: Integrated Electronics **Year/ Semester: 5 semester**

Subject code: SER6A

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
I	**Fundamental Digital Electronics** Number systems – binary – hexadecimal – Binary addition – subtraction (1's and 2's compliment method) – multiplication - division - BCD – Conversion – simplification of logic circuits - using (i) Boolean algebra, (ii) Karnaugh map – Demorgan's theorems - NAND and NOR as universal building blocks.	12	White Board and Marker	https://nptel.ac.in/courses/108/108/108108111/
II	**Combinational Logic Circuits** Half adder, full adder, half subtractor and full subtractor – 4 bit adder/subtractor - decoder, encoder - multiplexer - demultiplexer.	12	White Board and Marker	https://nptel.ac.in/courses/108/108/108108111

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III	**Sequential Logic Circuits** R.S flip flop, D flip flop and JK flip flops - JK Master Slave flip flop - synchronous and ripple counters - BCD counter – Up/Down counters - shift registers - serial and parallel registers - ring and twisted ring counter	12	White Board and Marker	https://nptel.ac.in/courses/108/108/108108111

Name of the subject: Mathematical Physics **Total Hours: 12 hours**
Subject code: SAR6B **Year:III**
Semester: 6 semester

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
II	**Elementary Complex Analysis** Functions of a Complex variable - Continuity and differentiability - single and multivalued functions - Analytic function - Cauchy - Riemann conditions (necessity and sufficiency). Cauchy - Riemann Conditions in the Polar (r,θ) coordinates.	12	White Board and Marker	--

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Name of the subject: Relativity & Quantum Mechanics
Subject code: SAR6A

Total Hours: 12 hours
Year/ Semester: 6 semester

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
IV	**Angular Momentum in Quantum Mechanics** Orbital angular momentum operators and their commutation relations - separation of three dimensional Schrodinger equation into radial and angular parts - Elementary ideas of spin angular momentum of an electron - Pauli matrices	12	White Board and Marker	--

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Dr. SUVITHA. A

CLASS: III B.Sc., PHYSICS
SEMESTER: VI
SUBJECT: MICROPROCESSOR AND FUNDAMENTALS SUBJECT CODE: SER6B

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit 2 : Programming Techniques	Instruction set of 8085 – data transfer, arithmetic, logic, branching and machine control group of instructions – addressing modes – register indirect, direct, immediate and implied addressing modes. Assembly language & machine language – programming techniques: addition, subtraction, multiplication, division, ascending, descending order, largest and smallest (single byte)	12	White Board and Marker.	-APP NAMED 8085 SIMULATOR
UNIT 3 : Interfacing memory to 8085	Memory interfacing – Interfacing 2kx8 ROM and RAM, Timing diagram of 8085 (MOV R., R. – MVI R.,data(8)) .	12	White Board and Marker	-
Unit 4 : Interfacing I/O Ports to 8085	Interfacing input port and output port to 8085 – Programmable peripheral interface 8255 – flashing LEDs.	12	White Board and Marker	-APP NAMED 8085 SIMULATOR

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Unit 5 : Interrupts	Interrupts in 8085 - hardware and software interrupts – RIM, SIM instructions – priorities – simple polled and interrupt controlled data transfer	12	White Board and Marker.	-

CLASS: III B.Sc., PHYSICS
SUBJECT: MATHEMATICAL METHODS
SEMESTER:VI
SUBJECT CODE: SAR6B

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit 1 Special functions -	Gamma and Beta functions - Series solutions of Legendre, Bessel and Hermite equations - Orthogonality properties of Legendre and Hermite Polynomials and Bessel functions	12	White Board and Marker, shared problems from Satyaprakash	-

Asha

CLASS: I B.Sc., PHYSICS
SUBJECT: THERMAL PHYSICS
SEMESTER: II
SUBJECT CODE: SR22A

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED

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Unit 1 Special functions -	Gamma and Beta functions - Series solutions of Legendre, Bessel and Hermite equations - Orthogonality properties of Legendre and Hermite Polynomials and Bessel functions	12	White Board and Marker.	https://drive.google.com/file/d/1XDabLVWmtTrUg1qH3G8gLvueNsCalrt7/view?usp=drive_web.

A. Asha

Name of the staff: Dr.M.JAYANTHI

TOTAL HOURS:18

Name of the subject:MECHANIC YEAR/SEMESTER:II B.Sc PHYSICS

SEMESTER-IV

Subject code: BPS-DSCO5

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
UNIT-2	**CONSERVATION LAWS** Definition of concepts-Conservation of Energy-Work-Kinetic and Potential energy- Examples-Conservative Forces-Potential Energy and Conservation of Energy in Gravitational and Electric field- Examples. Conservation of Linear and Angular Momentum: Internal forces and Momentum conservation-Center of mass- Examples-General Elastic Collision of Particles of Different	12	White Board and Marker	

M Jayanthi

R. Shanthi
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	Masses- System with Variable Mass-Examples-Conservation of Angular Momentum-Torque due to Internal Forces-Torque due to Gravity- Angular momentum about Center Of Mass- Proton scattering by heavy nucleus.			
UNIT-5	**SPECIAL RELATIVITY** Lorentz Transformation-Length Contraction-Examples- Time Dilation of Moving Clocks–Examples–Velocity Transformation–Velocity Addition–Variation of Mass with Velocity-Aberration of light–Longitudinal Doppler Effect	6	White Board and Marker	

M Jayanthi

Name of the staff: Dr.M.JAYANTHI

TOTAL HOURS:36

Name of the subject:RELATIVITY AND QUANTUM MECHANICS
YEAR/SEMESTER:III
B.Sc/SEM-VI

Subject code:**SAR6A**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED

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Unit 1	**Relativity** Frames of reference - Galilean transformation - Michelson - Morley experiment - Postulates of special theory of relativity - Lorentz transformation - length Contraction - time dilation - Relativity of simultaneity - addition of velocities - variation of mass with velocity – Mass energy relation - Elementary ideas of general relativity.	12	White Board and Marker	https://www.youtube.com/watch?v=ev9zrt_lec https://www.youtube.com/watch?v=Hb9oklGuBS https://www.youtube.com/watch?v=F2m_VZJM0Zc
Unit 2	**Wave Nature of Matter** Phase and group velocity - wave packet - expression of De Brogile's wave length - Davisson and Germer'sexperiment- G.P.Thompson's experiment - Electron microscope -Heisenberg's uncertainty principle and its consequences.	12	White Board and Marker	https://forms.gle/MxsQCy3bNHeyDWfz 7
Unit 5	**Solutions of Schrodinger Equation** Free particle solution - Particle in a box - Potential well of finite depth (one dimension) - linear harmonic oscillator - rigid rotator and hydrogen atom.	12	White Board and Marker	https://www.youtube.com/watch?v=UjaAxUO6-Uw

M Jayanthi

Name of the staff: Dr.M.JAYANTHI **TOTAL**
HOURS: 12

Name of the subject: MATHEMATICAL METHODS IN PHYSICS
YEAR/SEMESTER::III
B.Sc/SEM-VI

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Subject code:SAR6B

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit 4	**Classical Mechanics** Generalised coordinates - configuration space - Lagrange's equation - simple applications : to find equations of motion given a lagrangian; central potential and conservation of angular momentum - Hamilton function and Hamilton's equations - harmonic oscillator.	12	White Board and Marker	https://www.livescience.com/47814-classicalmechanics.html

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Name of the staff: Dr. V. Shreevidhyaa Suressh
Total Hours:12
Year/Semester: III B.Sc. PHYSICS /VI
Name of the subject: Mathematical Methods in Physics
Subject Code: SAR6B

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
III	**Vector Analysis** Scalar and Vector fields - Gradient, Divergence and Curl Equations of motion in the vector notation equations of motion (components) in cartesian coordinates and spherical polar coordinates - equation of motion in the polar coordinates	12	White Board and marker	https://classroom.google.com/c/MTE0NjYzMzYzNTYz/p/MzE3NTUyODYxNTc4/details https://classroom.google.com/c/MTE0NjYzMzYzNTYz/a/MjczNDQxODgyMzEy/details https://classroom.google.com/c/MTE0NjYzMzYzNTYz/p/MjUxNzkyODYzNDU4/details https://classroom.google.com/c/MTE0NjYzMzYzNTYz/p/MjUxMTgyODAzNzMy/details https://en.wikipedia.org/wiki/Spherical_coordinate_system

Name of the staff: Dr. V. Shreevidhyaa Suressh
Total Hours:24
Name of the subject: Integrated Electronics
Year/Semester: III B.Sc. PHYSICS /VI
Subject Code: SER6A

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED

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IV	**OP-AMP Basic Applications:** Characteristics parameters – differential gain – CMRR –	12	White Board and Marker	https://www.electronicsforu.com/technologytrends/learn-
	Slew rate bandwidth - applications inverter, non-inverter, integrator, differentiator, summing, difference and averaging amplifier solving simultaneous equations – comparator square wave generator - Wien's bridge oscillator - Schmitt trigger		black board and chalk .	electronics/operationalamplifier-basics https://www.monolithicpower.com/en/operational-amplifiers https://classroom.google.com/c/MTE0NjYzMzYzNTYz/a/MzEzMzA3OTU5NDYz/details
V	**Timer, DAC/ADC Timer 555** - Internal block diagram and working - astable multivibrator - schmitt trigger D/A converter - binary weighted method A/D converter - successive approximation method	12	black board and chalk	https://www.electronicstutorials.ws/waveforms/555_timer.html https://www.electronicstutorial.net/analogintegrated-circuits/dataconverters/binaryweighted-resistor-dac/ bhttps://www.electronicstutorial.net/analogintegrated-circuits/dataconverters/successiveapproximation-type-adc/

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Name of the staff: Dr. V. Shreevidhyaa Suressh

Name of the subject: Atomic Physics **Year/Semester: II BSc PHYSICS /IV**
Subject Code: BPS-DSCO5
Total Hours:24

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
III	**HARMONIC OSCILLATOR AND INVERSE SQUARE LAW OF FORCE** Mass on spring-Simple Pendulum (Force, energy and torque method)-Compound Pendulum-LC circuit-Motion of systems displaced from position of stable equilibrium-Average kinetic energy and potential energy. Inverse Square Law of Forces and Static Equilibrium- Orbits: Equation and Eccentricity-Circular orbit-Kepler's laws- Examples	12	. black board and chalk	
IV - Second half	**ELEMENTARY RIGID BODY DYNAMICS** Time Dependence of Motion- Examples- Rolling without slipping (three methods)-Torque about Center of Mass-Examples.	6	black board and cha	
V-First half	**SPECIAL RELATIVITY** Constancy of Speed of light-Michelson-Morley Experiment-Invariance of 'c' - Basic assumptions	6	black board and cha	

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Name of the staff: Mrs.Sheeba Gnanaselvi
Total Hours: 18
Name of the subject: Atomic physics
Year II year/ Semester: IV
Subject code: BPS-DSCO5

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit 1	NEWTON'S LAWS OF MOTION Newton's Laws of Motion- Forces and Equations of Motion- Motion of a Particle in a Uniform Gravitational Field- Newtonian law of Universal Gravitation- Examples-Electric and Magnetic Forces on a Charged Particle-The Magnetic Field and Lorentz Force- Examples- Motion of Charged Particle in a Uniform Electric and Magnetic Field- Conservation of Momentum-Contact Forces: Friction- Problems	12	black board and chalk	

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Unit 4	**ELEMENTARY RIGIDBODY DYNAMICS** The Equation of Motion-Angular Momentum and Kinetic Energy-Moment of inertia-Parallel Axis Theorem- Perpendicular Axis Theorem-Examples-Rotation about fixed axis	6	black board and chalk	

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Name of the staff: Mrs.M.Sheeba Gnanaselvi
Total Hours: 48
Name of the subject: Allied Physics-II
Year II CHEM/ Semester: IV
Subject code: BPS-CSA02

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit 1	**Current Electricity** Ohm's law – Law of resistance in series and parallel – Specific resistance – capacitors – capacitors in serial and parallel – Kirchoff's laws – Wheatstone's network – condition for balance Carey-Foster's bridge – measurement of resistance – measurement of specific resistance – determination of temperature coefficient of resistance – Potentiometer – calibration of Voltmeter.	12	black board and chalk	
Unit 2	**Electromagnetism** Electromagnetic Induction – Faraday's laws – Lenz law – Self Inductance – Mutual Inductance – Experimental Determination-Coefficient of Coupling A.C. Circuits – Mean value – RMS value – Peak value – LCR in series circuit – impedance – resonant frequency – sharpness of resonance.	12	black board and chalk	

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Unit 3	**Atomic and Nuclear Physics** Bohr's atom model – radius energy – Atomic excitation – Ionization potential – Frank and Hertz Method – Nucleus – Nuclear properties – Mass defect – Binding energy. Radio isotopes – Uses of radio isotopes – Nuclear fusion and Nuclear fission – X-rays – Production – properties – Derivation of Bragg's law – uses of X-raysin industrial and medical fields.	12	White board and marker	
Unit 5	**Digital Electronics** Number system – Decimal – Binary – Octal and Hexadecimal system – Double Dabble method – Binary addition, subtraction and multiplication– conversion of binary number to octal and hexadecimal numbers and vice versa. Logic gates – OR, AND, NOT, XOR, NAND and NOR gates – truth tables – Half adder and Full adder circuits – Laws and theorems of Boolean's algebra – De Morgan's theorems.	12	black board and chalk	

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Name of the staff: **Mrs.B.Gayatri**

Name of the subject: Thernal Physics

Subject code: SR22A

Total Hours: 36

Year I Phy/ Semester: II

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit I	**ELASTICITY** :Hooke's Law – Stress–Strain diagram –Elastic constants –Poisson's ratio – Relation between elastic constants and Poisson's ratio – Work done in stretching and twisting a wire – Twisting couple on a cylinder – Torsional pendulum (with and without masses)	12	White board and marker	
Unit II	**BENDING OF BEAMS** Cantilever– Expression for Bending moment – Expression for depression at the loaded end of the cantilever–Oscillations of a cantilever – Expression for time period-Experiment to find Young's Modulus – Non-Uniform bending– Experiment to determine Young's Modulus by Koenig's method- Uniform bending-Expression for elevation-Experiment to determine Young's Modulus using microscope	12	White board and marker	
Unit v	**ACOUSTICS OF BUILDINGS AND ULTRASONICS** Intensity of sound – Decibel – Loudness of sound –Reverberation – Sabine's reverberation formula – Acoustic intensity – Factors affecting the acoustics of Buildings. Ultrasonic waves – production of ultrasonic waves – Piezoelectric crystal method – Magnetostriction effect – Application of ultrasonic waves	12	White board and marker	

Total Hours: 12

Name of the subject: Mathematical methods in physics

Subject code: SAR6B

Year:III Phy/Sem:VI

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED

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Unit 5	**Statistical Physics** Quantum statistics of identical particles - Maxwell - Boltzmann, Bose - Einstein and Fermi - Dirac statistics - Derivation of Planck's radiation formula from Bose - Einstein statistics - Degenerate Fermi gas.	12	White board and marker	http://phy.syr.edu/~trodden/courses/math methods

Total Hours: 12

Name of the subject: Relativity and Quanntum Mechanics

Year III Phy/ Semester:VI **Subject code: SAR6A**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit 5	**Solutions of Schrodinger Equation** Free particle solution - Particle in a box - Potential well of finite depth (one dimension) - linear harmonic oscillator - rigid rotator and hydrogen atom.	12	White board with marker	.

Total Hours: 12

Name of the subject: Allied Physics -II

YearII Chem/ Semester: IV **Subject code: BPS-CSA02**

UNIT	CHAPTER	HOURS	METHODOLOGY	ICT TOOLS ADOPTED
Unit 4	**Analog Electronics** Semiconductor – PN junction diode – Bridge rectifier – Zener diode – Regulated power supply. Transistor – Working of a transistor – Transistor characteristics: CE Configuration – current gain relationship between α and β – Transistor Characteristics – CE Configuration only – CE amplifier – feedback – Hartley oscillator – Colpitt's oscillator	12	White board and marker	

B. Gayatri

R. Shanthi 4/5/22

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