PG AND DEPARTMENT OF PHYSICS

EVEN SEMESTER

TEACHING PLAN

2021-2022

A. GENERAL INFORMATION

Name of the Faculty : Dr.R.Priscilla

Department : Physics

Programme : B.Sc

Programme Code : BSP

Name of the Paper : ALLIED PHYSICS III

Lecture Hours / Practical Hours : 75 Hours

B. ABOUT THE COURSE

Course Objectives	Course outcomes	Teaching Methodology
• To give a broader perspective of basic physics. • To get a good exposure to the basic concepts of Physics. • To enable them to apply concepts related to Physics in their careers. • To familiarize the learner with applications of Physics. • To expose the under graduate students to the fundamentals of analog and digital electronics.	Understanding • Explain how this information is physical understanding of these systems. • Apply Electrical circuits for understanding the concept. • A broad qualitative knowledge of Physics. • Perform and describe physical processes. • Carry out the understanding of some of the physical concepts.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hrs	Practical Hrs	Remarks
Unit I Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Coulomb's law-Guass's theorem, its application field due to an infinite long plane, Sphere and Cylinder – • Mechanical force on the surface of a charged conductor- • Formation of cloud and charged particles. • Capacitors-Principles of a capacitor-capacity of a capacitor • capacity of Spherical and cylindrical capacitor • Energy of a charged capacitor-sharing of charges and loss of energy	21.02.2022 to 12.03.2022	2 hrs 3 hrs 2 hrs 3 hrs 2 hrs 3 hrs	Nil	Nil
Unit II Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Kirchhoff's Laws • Wheat stone's net work • Carey Foster Bridge Determination of		3 hrs 2 hrs	Nil	Nil

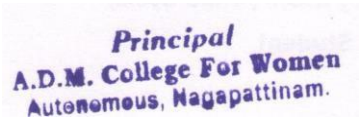
	resistance. • Circuit control and Protective Devices Switch-its types- • Fuse • Circuit Breakers Relays.	14.03.2022 to 01.04.2022	3 hrs 2 hrs 2 hrs 3 hrs		
Unit III Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Atom model- Vector atom model • Various Quantum Numbers • Pauli's Exclusion Principle. • X-Rays Continuous and Characteristics of X-ray • Bragg's law- • Determination of Crystal Structure by Laue's Powder Photo Graph Method.	04.04.2022 to 22.04.2022	2hrs 3 hrs 2 hrs 2 hrs 3 hrs 3 hrs	Nil	Nil
Unit IV Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	• Nucleus-Nuclear size • Nuclear Charge-Mass and Spin • Liquid drop model • Shell model, Nuclear fission and fusion- Nuclear reactor • Betatron • Bubble Chamber	25.04.2022 to 05.05.2022	2 hrs 3 hrs 2 hrs 3 hrs 2 hrs 3hrs	Nil	Nil
Unit V	• P-N junction-V-I		2 hrs	Nil	Nil

Content Hrs - 12, Assessment Hrs -3 Total – 15 Hrs	Characteristics of junction diode • Zener Diode- V-I Characteristics • Voltage regulator using Zener Diode. • Logic Gates**:** AND, OR, NOT gates-using discrete components- • NAND and NOR Gates as Universal building blocks – • Demorgan's theorem-Verification. Elementary ideas of ICS, SSI, MSI, LSI and VLSI.	06.05.2022 to 23.05.2022	3 hrs 2 hrs 3 hrs 2 hrs 3 hrs		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
Assignment	Assignment I –Unit –I and Unit –II (February)) Assignment II – Unit –III and Unit – IV (April)
Seminar	Unit –V (April)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (May)
Tutor Ward Meeting Mentor Mentee Meeting	Monthly once Every Saturday

PRINCIPAL



TEACHING PLAN

A. GENERAL INFORMATION

Name of the Faculty : Dr. N. Lavanya
Department : Physics
Programme : B.Sc
Programme Code : BSP
Name of the Paper : MECHANICS
Lecture Hours / Practical Hours : 90 Hours

B. ABOUT THE COURSE

Course Objectives	Course outcomes	Teaching Methodology
• An attempt is made to give a better insight of the change of position of any physical object or event and their consequences. • Apply Kepler's law to describe the motion of planets and satellite in circular orbit, • through the study of law of Gravitation. • Describe special relativistic effects and their effects on the mass and energy of a moving object. • Understand that the center of gravity, center of pressure and the atmospheric Pressure.	• Understand Laws of Motion and their application • Learn the concept of Conservation of Energy, Momentum, Angular • Momentum and pply them to basic problems. • Understand the analogy between Translational and Rotational Dynamics, and application of both motions simultaneously in analyzing rolling with slipping. • Develop the Energy of the Friction with the Compound Pendulum and • Friction Clutch. • To understand various Dynamical Situations, Notion of Inertial Frames and Concept of Galilean Invariance	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hrs	Practical Hrs	Remarks
Unit V Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Centre of gravity of a body - Centre of gravity of a trapezoidal lamina - C.G. of a • solid hemisphere C.G. of a solid tetrahedron - C.G. of a solid cone.Centre of • Pressure rectangular lamina triangular lamina • triangular lamina immersed in a liquid. • Conditions of equilibrium of a floating body • Stability of equilibrium of a floating body • Metacentre Experimental determination of a metacentric height of a ship. • The barometer - Fortin's barometer • Correction for a	21.02.22 to 15.03.22	2 hrs 2 hrs 2 hrs 1 hr 2 hrs 2 hrs 1 hr 2 hrs	Nil	Nil

	barometer • Faulty barometer • Variation atmospheric pressure with altitude.		1 hr 1 hr 2 hrs		
Unit I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Projectile particle projected in any direction • Path of a projectile is a parabola • Range of a projectile on • plane inclined to the horizontal • Maximum range on the inclined plane • Impulse of a force • Laws of impact • Direct impact between two smooth spheres • oblique impact between two smooth spheres • Impact of a smooth sphere on a smooth fixed horizontal plane • Loss of KE due to direct impact Oblique impact Reduced mass.	16.03.2022 to 08.04.2022	2 hrs 2 hrs 2 hrs 1 hr 2 hrs 2 hrs 1 hr 2 hrs 1 hr 1 hr 2 hrs	Nil	Nil
Unit II Content- 15 Hrs, Assessment -3 Hrs	• Centripetal • Centrifugal forces • Hodograph		1hr 2 hrs 2 hrs	Nil	Nil

Total – 18 Hrs	• Expression for normal acceleration • Motion of a cyclist along a curved path • Motion of a railway carriage round a curved track • upsetting of a carriage Motion of a carriage on a banked up curve • Effect of earth's rotation on the value of the acceleration due to gravity • Variation of 'g' with altitude, latitude and • Depth.	12.04.2022 to 26.04.2022	3 hrs 2 hrs 2 hrs 1 hr 1 hr 2 hrs 2 hrs		
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Newton's law of gravitation • Mass and density of earth • Inertial and Gravitation mass • Determination of GBoy's experiment • Kepler's Laws of planetary motion • Deduction of Newton's law of gravitation from Kepler's Law • Gravitation - Field potential	27.04.2022 to 07.05.2022	2 hrs 1hr 2 hrs 1 hr 2 hrs 2 hrs 1 hr	Nil	Nil

	• Intensity of Gravitational field • gravitational potential due to a point mass • Equipotential surface • Gravitational potential and field due to a spherical shell and solid sphere • Escape velocity • Orbital velocity.		2 hrs 1 hr 1 hr 1 hr 1hr 1hr		
Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Moment of Inertia - Kinetic energy and angular momentum of rotating body- • Theorems of perpendicular and parallel axes – • Acceleration of a body rolling down an inclined plane without slipping • Oscillations of a small sphere on a large concave smooth surface – • Compound pendulum • Centre of suspension and centre of oscillation • Centre of percussion – • Minimum period of a compound pendulum	09.05.2022 To 25.05.2022	2 hrs 2 hrs 2 hrs 1 hr 2 hrs 2 hrs 1 hr 1 hr	Nil	Nil

	• Kater'spendulum. • Friction - Laws of friction – • Resultant reaction - Angle and cone of friction – • Equilibrium of a body on a rough plane inclined to the horizontal – • The friction clutch.		1 hr 1 hr 1 hr 1hr 1hr		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
Assignment	Assignment I –Unit –I and Unit –II (February)) Assignment II – Unit –III and Unit – IV (April)
Seminar	Unit –V (April)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (May)
Tutor Ward Meeting	Monthly once
Mentor Mentee Meeting	Every Saturday

PRINCIPAL

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Autonomous, Nagapattinam.

TEACHING PLAN

A. GENERAL INFORMATION

Name of the Faculty	: Dr.N.Lavanya
Department	: Physics
Programme	: B.Sc
Programme Code	: BSP
Name of the Paper	: ALLIED PHYSICS III
Lecture Hours / Practical Hours	: 75 Hours

B. ABOUT THE COURSE

Course Objectives	Course outcomes	Teaching Methodology
• To give a broader perspective of basic physics. • To get a good exposure to the basic concepts of Physics. • To enable them to apply concepts related to Physics in their careers. • To familiarize the learner with applications of Physics. • To expose the under graduate students to the fundamentals of analog and digital electronics.	Understanding • Explain how this information is physical understanding of these systems. • Apply Electrical circuits for understanding the concept. • A broad qualitative knowledge of Physics. • Perform and describe physical processes. • Carry out the understanding of some of the physical concepts.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hrs	Practical Hrs	Remarks
Unit I Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Coulomb's law- Guass's theorem, its application field due to an infinite long plane, Sphere and Cylinder – • Mechanical force on the surface of a charged conductor- • Formation of cloud and charged particles. • Capacitors- Principles of a capacitor-capacity of a capacitor • capacity of Spherical and cylindrical capacitor • Energy of a charged capacitor- sharing of charges and loss of energy	21.02.2022 to 12.03.2022	2 hrs 3 hrs 2 hrs 3 hrs 2 hrs 3 hrs	Nil	Nil
Unit II Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Kirchhoff's Laws • Wheat stone's net work		3 hrs 2 hrs	Nil	Nil

	• Carey Foster Bridge Determination of resistance. • Circuit control and Protective Devices Switch- its types- • Fuse • Circuit Breakers Relays.	14.03.2022 to 01.04.2022	3 hrs 2 hrs 2 hrs 3 hrs		
Unit III Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Atom model- Vector atom model • Various Quantum Numbers • Pauli's Exclusion Principle. • X-Rays Continuous and Characteristics of X-ray • Bragg's law- • Determination of Crystal Structure by Laue's Powder Photo Graph Method.	04.04.2022 to 22.04.2022	2hrs 3 hrs 2 hrs 2 hrs 3 hrs 3 hrs	Nil	Nil

Unit IV Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Nucleus-Nuclear size • Nuclear Charge-Mass and Spin • Liquid drop model • Shell model, Nuclear fission and fusion-Nuclear reactor • Betatron • Bubble Chamber.	25.04.2022 to 05.05.2022	2 hrs 3 hrs 2 hrs 3 hrs 2 hrs 3hrs	Nil	Nil
Unit V Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• P-N junction-V-I Characteristics of junction diode • Zener Diode- V-I Characteristics • Voltage regulator using Zener Diode. • Logic Gates**:** AND, OR, NOT gates-using discrete components- • NAND and NOR Gates as Universal building blocks – • Demorgan's	06.05.2022 to 23.05.2022	2 hrs 3 hrs 2 hrs 3 hrs 2 hrs 3 hrs	Nil	Nil

	theorem- Verification. Elementary ideas of ICS, SSI, MSI, LSI and VLSI.				

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
Assignment	Assignment I –Unit –I and Unit –II (February)) Assignment II – Unit –III and Unit – IV (April)
Seminar	Unit –V (April)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (May)
Tutor Ward Meeting Mentor Mentee Meeting	Monthly once Every Saturday

PRINCIPAL

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TEACHING PLAN

A. GENERAL INFORMATION

Name of the Faculty	: Mrs.S.Aruljothi Department of Physics
Department	: Physics
Programme	: II M.Sc.,
Programme Code	: PSP
Name of the Paper	: Advanced Physics
Lecture Hours / Practical Hours	:90 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• To learn the basics and the advanced applications of physics in the fields of Astrophysics, Biomedical and wireless communication. • Understanding basic principles and phenomena in the area of medical diagnostic instrumentations. • Introduce communication systems for space vehicles. • To introduce the concepts and techniques associated with wireless communication system. • To familiarize with state of art standards used in wireless cellular systems. • 5. To familiarize with state of art standards used in wireless cellular systems.	• On completion of the Course, Students should be able to do • Able to use radio astronomical data to measure physical properties of astronomical targets. • Identify and solve basic communication problems, analyse transmitter and receivers. • Demonstrate measuring of basic medical parameters. • Analyse the radio channel characteristics and the cellular principles • Ability to analyse improved data services in cellular communication.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• **Astrophysics:** Physical properties of stars • Life cycle of a star • Endproducts of stellar evolution • Structure of milky way • Expanding universe • Future prospects. • Radio telescopes • Synchrotron radiation • Spectrallines in RA • Major discoveries in RA • RA in India • Hot big bang cosmology.	21.02.2022 to 11.03.2022	2 hrs 1 hr 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 2 hrs 1 hr	Nil	Nil
Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Overview • Methodological issues in cost beneficial analysis of space programme • The INSAT system • Broadcasting • Telecommunication • Meteorology • Indian remote sensing programme • Geo informatics (basic	14.3. 2022 to 01.4. 2022	2 hrs 1 hr 2 hrs 1 hr 1 hr 1 hr 2 hrs 2 hrs	Nil	Nil

	idea only) • The launching programme.		3 hrs		
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Ear and hearing Aids: Basic measurements of ear function • Air and bone conduction Masking • Middle ear impedance audiometry • Oto-acoustic emission • Types of hearing aids and Cochlea rim plants • Sensory substitution aids • Electrophysiology: Source of biological potentials • Signal size and electrodes • Functions • Features of ECG, EEG and EMG • Cardiac and blood related devices: Pacemakers • Electromagnetic compatibility – Defibrillators -Artificial heart valves – Cardiopulmonary bypass –Hemodialysis	4.4. 2022 to 26.4. 2022	2 hrs 2 hrs 2 hrs 1 hr 1 hr 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr	Nil	Nil

Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Cellular Radio: IMTS, AMPS control system • Security and privacy • Cellular telephone specifications and operations • Cell site equipment • Fax and data communication using cellular phones and CDPD • Digital cellular systems Personal • Communication Systems (PCS): • Differences between CS • PCS, IS-136 TDMA PCS, GSM, IS-95 CDMA PCS • Comparison of modulation schemes • Data communication with PCS	27.4.22 to 07.5.2022	2 hr 1 hr 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 2 hrs 2 hrs	Nil	Nil
Unit V Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Satellite orbits • Satellites for communication • Satellites and transponders • Signal and noise calculations • InMARST, • MSAT system using low • medium-earth orbit	09.05.2022 to 25.05.2022	1hr 2 hrs 1 hr 1 hr 1 hr 1 hr 1 hr	Nil	Nil

	stations. • Paging (one-way and two-ways) • messaging system Voice paging • LAN topologies Ethernet bridges • Wireless Radio LANs Bluetooth • Wireless bridges • Connections using infrared wireless modems • Wireless packet data services.		1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
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Tutor Ward Meeting	Monthly once
Mentor Mentee Meeting	Every Saturday

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TEACHERS PLAN

A. GENERALINFORMATION

Name of the Faculty : S.Aruljothi

Department : Physics

Programme : B.Sc

Programme Code : BSP

Name of the Paper : Material Science

Lecture Hours /Practical Hours : 90 Hours

B. ABOUTTHE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• To develop knowledge in material science and to understand the relationship between properties and material characteristics. • This course provides students an understanding of basic structure and crystal arrangement of materials, the phase diagrams, advantages of heat treatment and the method of heat treatment processes, powder metallurgy processes. • The need and application of composite materials. • Introduce the concept of structure property relations. • Develop intuitive understanding of the subject to present a wealth of real world engineering examples to give students a feel of how material science is useful in engineering practices.	• Upon completion of this course the student will be able to: • Identify the properties of metals with respect to crystal structure and grain size • Interpret the phase diagrams of materials • Classify and Distinguish different types of cast irons, steels and non ferrous alloys. • Describe the concept of heat treatment of steels & strengthening mechanisms	• Class room Chalk and Talk • Power point. • e-Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLANOFTHEWORK

Unit /Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit l Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Crystal Structure Types of crystals space lattice • Basis- unit cell and lattice parameters • Bravais lattices- • Lattice planes and Miller indices • Inter planar spacing in a cubic lattice • SC ,BCC ,FCC • Sodium chloride • Diamond crystal structure • Bonding of solids Ionic bond • Covalent & Metallic bond • Hydrogen bond	21.02.2022 to 11.03.2022	2hrs 1hrs 2hrs 2hrs 1 hr 1 hr 2hrs 1hr 2hrs 1hr	Nil	Nil
Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	**Mechanical Behavior of Materials** • Different mechanical • properties of engineering materials • creep &Fracture • technological properties • factors affecting mechanical properties of material • Heat treatment-	14.3. 2022 to 01.4. 2022	1hr 2hrs 1hr 2hrs 2hrs	Nil	Nil

	cold and hot working- • Types of mechanical tests- • Metal forming process- Deformation of metals- • Deformation of crystals polycrystalline materials.		2hrs 2hrs 1hr 2hrs		
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	**Super Conducting Materials** • Superconductivity • Properties- • Meissner's effect- • London equations • Types of superconductors • Type I and Type II • High temperature superconductors • Josephson effects and its applications • •SQUIDS • •Applications of superconductor • •BCS Theory (Basic Idea.)	4.4. 2022 to 26.4. 2022	2hrs 2hrs 1hr 2hrs 2hrs 2hrs 1hr 2hrs 1hr	Nil	Nil

Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	**Nano Materials** • Types of Nano materials 1D ,2D ,&3D • Properties of nanomaterial's size dependent • synthesis of nanomaterial • Fullerenes • Application of nanomaterial • Carbon nanotubes • Fabrication • structure of carbon nano tubes • Properties of carbon nanotubes • Mechanical Electrical • Applications of CNT's.	27.4.22 to 07.5.2022	2hrs 1hr 1hr 2 hrs 2hrs 1hr 2hrs 2hrs 2hrs	Nil	Nil
Unit V Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	**Smart Materials 15hrs** • •Metallic glass • Applications • Fiber reinforced metals • SAW Materials • Applications of Biomaterials Ceramic • Nuclear engineering materials • Nanophase materials • SMART materials • Conducting polymers • Optical materials • Fiber optic materials Applications.	09.05.2022 to 25.05.2022	1hr 1hr 2hrs 2hrs 1hr 1hr 1hr 1hr 2hrs 1hr 2hrs	Nil	Nil

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
Assignment	Assignment I –Unit –I and Unit –II (February)) Assignment II – Unit –III and Unit – IV (April)
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Quiz	Two Mark Quiz Test - Unit I – Unit – V (May)
Tutor Ward Meeting	Monthly once
Mentor Mentee Meeting	Every Saturday

PRINCIPAL

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty	: Ms. R.Rubashri, Department of Physics
Department	: Physics
Programme	: III B.Sc.,
Programme Code	: BSP
Name of the Paper	: Communications Physics
Lecture Hours / Practical Hours	: 90 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• To promote scientific temper among students and update the basic functioning of various communication systems. • To be highly skilled, interdisciplinary professionals who can identify and solve engineering problems from unusually broad physical perspectives. • To engage vigorously in further studies in interdisciplinary graduate programs and a wide variety of other lifelong learning opportunities. • To pursue careers that incorporate ethical and professional responsibility, as well as good citizenship. • Students will demonstrate a thorough understanding of the	• Students will demonstrate an understanding of core knowledge in Physics, including the major premises of classical mechanics, Example and Modern Physics. • Students will demonstrate written and oral communication skills in communicating physics-related • Students will demonstrate understanding of the applications of numerical techniques for modeling physical systems for which analytical methods are inappropriate or of limited utility. • Students will demonstrate a	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

analytical approach to modeling of physical phenomena.	thorough understanding of the analytical approach to modeling of physical phenomena. • Students will demonstrate an understanding of the impact of Physics and Science on society.	

D. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Transmitter • Modulation • need for modulation • types of modulation amplitude frequency • phase modulation modulation factor • sideband frequencies in AM wave • limitations of amplitude modulation • frequency modulation • block diagram of AM and FM Transmitter. Receiver	21.02.2022 to 11.03.2022	2 hrs 2 hrs 2 hrs 1 hr 1 hr 2 hrs 1 hr 1 hr 1 hr	Nil	Nil

	• demodulation-AM & FM radio receivers • super heterodyne radio receiver		1 hr 1 hr		
Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Introduction • structure of optical fiber • total internal reflection in optical fiber • principal and propagation of light in optical fiber • acceptance angle • numerical aperture • types of optical fibers based on material • number of modes • refractive index profile • fiber optical communication system (block diagram) • fiber optic sensors • Temperature sensor • fiber optic endoscope	14.3. 2022 to 01.4. 2022	1hr 1hr 1hr 1hr 1hr 2hr 1hr 1hr 1hr 2hr 1hr 1hr 1hr	Nil	Nil
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Basic radar system • Radar range • Antenna scanning • Pulsed radar system • A-Scope • Plan position indicator • Tracking radar • Moving target	4.4. 2022 to 26.4. 2022	2hrs 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 2 hrs	Nil	Nil

	indicator • Doppler effect-MTI Principle • CW Doppler Radar • Frequency modulator CW Radar.		1hr 1hr 1hr		
Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Introduction history of satellites • satellite communication system • satellite orbits classification of satellites • types of satellites • basic components of satellite communication • constructional features of satellites • multiple access • communication package • antenna • power source • satellite foot points • satellite, communication in India.	27.4.22 to 07.5.2022	2 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 2 hrs 1 hr 1 hr 2 hrs	**Nil**	**Nil**
Unit V Content- 15	• GSM • mobile services		1hr 2 hrs	Nil	Nil

Hrs, Assessment -3 Hrs Total – 18 Hrs	• concept of cell system architecture • radio interface • logical channels and frame hierarchy • protocols • localization and calling • Handover • facsimile (FAX) • application • VSAT (very small aperture terminals) • Modem • IPTV (internet protocol television) • Wi-Fi - 3G ,4G (Basic ideas only).	09.05.2022 to 25.05.2022	1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr 1 hr		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
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Seminar	Unit –V (April)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (May)
Tutor Ward Meeting	Monthly once
Mentor Mentee Meeting	Every Saturday

PRINCIPAL

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TEACHERS PLAN

A. GENERAL INFORMATION

Name of the Faculty : Ms. R.Rubashri, Department of Physics

Department : Physics

Programme : II B.Sc Computer Science.,

Programme Code : BSP

Name of the Paper : Applied Physics III

Lecture Hours / Practical Hours : 60 Hours

B. ABOUT THE COURSE

Course Objectives	Course Outcomes	Teaching Methodology
• Working of P and N type semiconductors, P-N junctions, Forward and Reverse biased junctions, LEDs. • To able to photodiode and solar cells, p-n-p, n-p-n transistors, different characteristics of CB,CE and CC configurations, biasing for CE amplifiers and classification of amplifiers. • Operational amplifiers and its characterization, circuits using Op-Amp for making Summing and subtracting circuits, differentiators and integrators. • Working of Oscilloscope (CRO) and applications and usage of oscilloscopes for measuring voltages, currents and study of waveforms. • understand the phase shifter, adder, subtractor, using op-amp comparator.	• This programme could provide skilled in electro principles. • Helps students to acquir conceptual knowledge o various kinds of Electron devices. • Learned about to basic concept of laser and fibe optics. • Develop and analysis of fabrication and Electron measuring Instruments CRO. • To design the basic operational amplifier ide inverting and non-invert comparator.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit / Modules	Topic to be covered	Proposed date	Lecture Hours	Practical Hours	Remarks
Unit I Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Theory of Energy bands in crystals • Distinction between Conductor, Insulator and Semiconductor- Intrinsic and Extrinsic semiconductor • PN Junction • V-I characteristics of PN Junction diode • Zener diode –Voltage regulator using diode • Basic ideas of LCD, LED- Photodiode • Phototransistor.FET • FET characteristics • FET as a switch.	21.02.2022 to 12.03.2022	2 hrs 2 hrs 1 hr 1 hr 1 hr 2 hrs 1 hr 1 hr 1 hr	Nil	Nil
Unit II Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Transistor • The working of a transistor- three Configuration- • Transistor Characteristics • CE Configuration. **Amplifiers and Oscillators** • Single stage CE amplifier	14.03.2022 to 01.04.2022	2 hrs 2 hrs 1 hr 1 hr 1 hr	Nil	Nil

	• power amplifiers Efficiency of class-B Power amplifier • push – pull amplifier • General theory of feedback • Properties of negative feedback – Criterion for oscillations – Tuned Collector oscillator • Astable and Bistable Multivibrator. (Content- 9 Hrs, Assessment -3 Hrs) (12 Hrs).		2 hrs 1 hr 1 hr 2 hrs 2 hrs		
Unit III Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Lasers: Basic concepts of stimulated emission • Population inversion and metastable state • -Ruby laser and He –Ne laser production • –applicatio F**iber optics**: Introduction – • Optical fiber • total –Critical angle - Principle of propagation of light through optical fibers • Type of optical fibers - Fiber optics communication system	04.04.2022 to 22.04.2022	2hrs 2 hrs 2 hrs 2 hrs 2 hrs 2 hrs 2 hrs	-	-

	• Fiber optics sensors		1 hr		
Unit IV Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs .	• Integrate circuits – Advantage and Disadvantages of Ic's – Ic classification –Ic- • Fabrication of a Monolithic Ic - Electronics Instruments • Multimeter – Multimeter as • voltmeter –Ammeter • ohmmeter • Vacuum Tube Voltmeter (VTVM) • CRO Cathode ray tube deflection and sensitivity.	25.04.2022 to 05.05.2022	2 hrs 2 hrs 1 hr 1 hr 1 hr 2 hrs 2 hrs 2 hrs	-	-
Unit V Content- 12 Hrs, Assessment -3 Hrs Total – 15 Hrs	• Basic Operational Amplifier • Ideal characteristics • Inverting and Non • Inverting Basic parameters of op-amp (CMRR, Input) • CMRR • Sign and Scale Charges, Phase Shifter, Adder, • Subtractor, • Integrator &Differentiator, • OP-Amp as a Comparator.	06.05.2022 to 23.05.2022	2 hrs 2 hrs 1 hr 1 hr 1 hr 2 hrs 1 hr 1 hr 1 hr	Nil	Nil

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
Assignment	Assignment I –Unit –I and Unit –II (February)) Assignment II – Unit –III and Unit – IV (April)
Seminar	Unit –V (April)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (May)
Tutor Ward Meeting	Monthly once
Mentor Mentee Meeting	Every Saturday

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TEACHING PLAN

A. GENERAL INFORMATION

Name of the Faculty : Ms. G. Swetha

Department : Physics

Programme : M.Sc

Programme Code : PSP

Name of the Paper : Crystal Growth and Thin Film

Lecture Hours / Practical Hours : 90 Hours

B. ABOUT THE COURSE

Course Objectives	Course outcomes	Teaching Methodology
• The aim of the course is to provide you an extended knowledge on advanced condenced matter topic like crystal growth methods. • To understand and compare the various crystal growth techniques. • To know the principles in the method involved in the growth of crystal. • know the principles ,the advantage and the disadvantages different thin film deposition method. • To understanding the theories involve in crystal growth nucleation process and solution, melt and vapour growth techniques. • To learn the importance of	• Nucleation mechanism and different kinds of nucleation. • Learn about important crystal growth technique like Bridgeman, czochralski (pulling method),solution growth and hydrothermal methods, physical and chemical vapor transport. • To understand with various techniques involved in crystal growth. • To determine various theoretical parameters. • understand the effect of the process condition on film growth microstructural evaluation.	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

different thin films and coatings for a variety industrial applications.		

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hrs	Practical Hrs	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Ambient phase equilibrium • Super saturation • Equation of ThomsonGibbs • Types of nucleation • Formation of critical nucleus • Classical theory of nucleation • Homo and heterogeneous nucleus • Rate of nucleation • Growth from vapor phase, solutions and melts • Epitaxial growth • Growth mechanism and classification • Kinetics of growth of epitaxial films.	21.2.2022 to 11.3.2022	1 hr 1 hr 1 hr 2 hrs 1hr 2 hrs 2 hr 1 hr 1hr 1hr 1 hr 1hr	Nil	Nil
Unit II Content-	• Classes of crystal system	14.3. 2022 to 01.4.	2 hrs	Nil	Nil

18 Hrs	• Crystal symmetry • Solvents and solutions • Solubility diagram • Super solubility • Expression for super saturation • Miers TC diagram • Solution growth • Low and high temperatures solution growth • Slow cooling and solvent evaporation methods • Constant temperature bath as a crystallizer.	2022	1 hrs 1 hr 1 hr 2 hr 2 hr 1hr 1hr 1hr 1hr 2 hrs		
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Principle of gel technique • Various types of gel • Structure and importance of gel • Methods of gel growth and advantages • Melt technique • Czochralski growth • Bridgeman method • Flux growth • Hydrothermal growth • Vapor-phase growth	4.4. 2022 to 26.4. 2022	2hrs 1 hr 2hr 2 hrs 2 hrs 1hr 2 hr 1 hr 1 hr 1 hrs	Nil	Nil

	• Physical vapor deposition • Chemical vapor deposition.		1hr 1 hr		
Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Vacuum evaporation • E-beam, pulsed laser and ion beam evaporations • Glow discharge and plasmas • Mechanisms and yield of sputtering processes • DC, RF, magnetically enhanced, • reactive sputtering • Spray pyrolysis • Electro deposition • Sol-gel technique.	27.4.22 to 07.5.2022	2 hrs 2 hr 2 hr 2 hr 1 hr 1 hr 2 hrss 2 hrs 1 hr	Nil	Nil
Unit V Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• X–ray diffraction – Powder and single crystal • Fourier transform infrared analysis • Elemental dispersive X-ray analysis • Transmission and scanning electron microscopy • UV-vis-NIR spectrome Chemical	09.05.2022 to 25.05.2022	2 hrs 2 hrs 2 hr 2 hrs 2 hrs	Nil	Nil

	etching • Vickers micro hardness • Basic principles and operations of AFM and STM.		2 hrs 3 hr		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
Assignment	Assignment I –Unit –I and Unit –II (February)) Assignment II – Unit –III and Unit – IV (April) Unit –V (April) Two Mark Quiz Test - Unit I – Unit – V (May)
Seminar	Every Saturday
Quiz	
Tutorial Ward Meeting	

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TEACHING PLAN

A. GENERAL INFORMATION

Name of the Faculty : Ms. G. Swetha & Ms.R. Rubashri

Department : Physics

Programme : B.Sc

Programme Code : BSP

Name of the Paper : Classical and Quantum Physics

Lecture Hours / Practical Hours : 90 Hours

B. ABOUT THE COURSE

Course Objectives	Course outcomes	Teaching Methodology
• An attempt is made to give a better insight of the change of position of any physical object or event and their consequences. • Apply Kepler's law to describe the motion of planets and satellite in circular orbit, through the study of law of Gravitation. • Describe special relativistic effects and their effects on the mass and energy of a moving object. • Able to perform energy momentum of dynamics in rigid body. • Understand that the center of gravity, center of pressure and the atmospheric Pressure.	• After taking this course students will be able to appreciate the beauty of quantum mechanics. They will be knowing all types of representations of operators and ways to apply them in different problems. • The most important thing students learned form this course was how to solve the hydrogen atom problem by using quantum mechanics. • Describe and understand the motion of a mechanical system using Lagrange Hamilton formalism. • Describe and understand the motion of the forces in non inertial systems. • Understand historical aspects of development of quantum mechanics	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

C. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hrs	Practical Hrs	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Mechanics of a particle and system of particles • Conservation laws • Constraints • Generalized coordinates • Principle of virtual work- D' Alembert's principle • Lagrange's equation • Hamilton's principle • Lagrange's equation of motion.	21.2.22 to 11.3.22	2 hrs 2 hrs 2 hrs 2 hr 3 hr 1 hrs 2 hr 1 hr	Nil	Nil
Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Conservation of energy and angular momentum • Inverse square law • Kepler's problem • Vitriol theorem – Scattering in a central force field • Artificial satellites • Geo stationary satellites • Eccentricity of orbit of satellites Escape velocity.	14.3.22 to 01.4.22	2 hrs 2 hrs 2 hrs 2 hr 3 hr 1 hrs 2 hr 1 hr	Nil	Nil
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Euler's angles • Moments and products of inertia Euler's equations • Symmetrical top • Theory of small oscillations Normal modes and frequencies	4.4.22 to 26.04.2022	2 hrs 2 hrs 2 hrs 2 hr 3 hr 1 hrs	Nil	Nil

	Linear triatomic molecule Wave equation and motion • Phase velocity • Group velocity • Dispersion.		2 hr 1 hr		
Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Basic postulates of wave Mechanics Development of Schrödinger wave equation • Time independent and dependent forms of equations • Interpretation and Condition On wave function • Orthogonal and normalized wave function, • Eigen function and eigen values • Expectation values Ehrenfest's theorem.	27.4.2022 to 07.5.2022	2 hr 2 hr 2 hr 2 hr 2 hr 1hr 2 hr 2 hr	Nil	Nil
Unit V Content- 18 Hrs	• Linear harmonic oscillator • Particle in a		3 hrs 3 hr 2 hr	Nil	Nil

	box • Rectangular barrier potential • Rigid rotator • Hydrogen atom.	09.05.2022 to 25.05.2022	2 hrs 2 hrs 2 hrs		

D. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
Assignment	Assignment I –Unit –I and Unit –II (February)) Assignment II – Unit –III and Unit – IV (April)
Seminar	Unit –V (April)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (May)
Tutorial Ward Meeting	Every Saturday

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TEACHING PLAN

E. GENERAL INFORMATION

Name of the Faculty	: Ms. G. Swetha
Department	: Physics
Programme	: M.Sc
Programme Code	: PSP
Name of the Paper	: Quantum Mechanics
Lecture Hours / Practical Hours	: 90 Hours

F. ABOUT THE COURSE

Course Objectives	Course outcomes	Teaching Methodology
• To learn the fundamental concepts and certain theoretical methods of quantum mechanics and their applications to microscopic systems. • To discuss the concepts of wave/particle duality, probability distributions and wave functions. • To acquire working knowledge of quantum mechanics postulates on the evolution of physical systems. • To apply the postulates of quantum mechanics to simple harmonic oscillator. • To understand relativistic Quantum mechanics.	• After taking this course Solves the time-independent Scrondinger equation as an solve intermediate step to solve the time dependent Scrondinger equation. • Identifies correctly the mathematical space that contains all possible states of a physical system, using Dirac 's equation. • Build a Hilbert space based on a complete set commuting observables. • Relativistic Quantum mechanics understanding the Klein Gordon equation for a	• Class room Chalk and Talk • Power point. • e- Module • Classes through Practical demonstration. • Showing models to the students to make them understand.

	free particle and Dirac equation for a free particle and Dirac matrices. • Compute the energy levels and evaluation the quantum simple harmonic oscillator.	

G. PLAN OF THE WORK

Unit/ Modules	Topic to be covered	Proposed date	Lecture Hrs	Practical Hrs	Remarks
Unit I Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Mechanics of a particle and system of particles • Conservation laws • Constraints • Generalized coordinates • Principle of virtual work-D' Alembert's principle • Lagrange's equation • Hamilton's principle • Lagrange's equation of motion.	21.2.2022 to 11.3.2022	2 hrs 2 hrs 2 hrs 2 hr 1hr 2 hrs 2 hr 2 hr	-	Assessment -3 Hrs
Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Linear harmonic oscillator: Solving the one • -dimensional	14.3. 2022 to 01.4. 2022	3 hr 3 hr		

	Schrödinger equation and abstract operator method • Particle in a box • Rectangular barrier potential • Rigid rotator • Hydrogen atom.		3 hr 2 hr 2hr 2 hr	-	Assessment -3 Hrs
Unit II Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• **TIME-INDEPENDENT PERTURBATION THEORY:** • Non-degenerate (first-order) and degenerate perturbation theories • Stark effect • WKB approximation and its application to tunneling problem • Quantization rules. • **TIME-DEPENDENT PERTURBATION THEORY:** • Constant and harmonic perturbations • Transition probability	4.4. 2022 to 26.4. 2022	2hrs 1 hr 2hr 2 hrs 2 hrs 2 hrs 1 hr 3 hrs	-	Assessment -3 Hrs

	• Sudden approximation.		1 hrs		
Unit III Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• **SCATTERING THEORY:** Scattering amplitude and cross-section • Green's function approach • Born approximation and its application to square-well and screened • Coulomb potentials. • **ANGULAR MOMENTUM:** Components of orbital angular momentum • Properties of **L** and **L2** • Eigen pairs of **L2and**Lz • Spin angular momentum.	27.4.22 to 07.5.2022	2 hrs 2 hr 2 hr 2 hrs 2 hrs 2 hrs 1 hr 2 hrs	-	Assessment -3 Hrs
Unit IV Content- 15 Hrs, Assessment -3 Hrs Total – 18 Hrs	• Klein--Gordon equation for a free particle and its solution • Dirac equation for a free particle and Dirac matrices	09.05.2022 to	3 hrs 2 hrs		

	• Charge and current densities • Plane wave solution • Negative energy states • Zitterbewegung Spin of a Dirac particle • Spin-orbit coupling.	25.05.2022	2 hr 2 hrs 2 hrs 2 hrs 2 hr	-	-

H. ACTIVITIES

Activities Name	Details
Test	Monthly Test- Unit-I (March) CIA / Mid Semester – Unit-I - Unit-III (April) CIA / Model Examination – Unit I – Unit V (May)
Assignment	Assignment I –Unit –I and Unit –II (February)) Assignment II – Unit –III and Unit – IV (April)
Seminar	Unit –V (April)
Quiz	Two Mark Quiz Test - Unit I – Unit – V (May)
Tutorial Ward Meeting	Every Saturday

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