

NEHRU MEMORIAL COLLEGE (AUTONOMOUS)

**NATIONALLY ACCREDITED WITH "A" GRADE BY NAAC
PUTHANAMPATTI, TRICHY – 621007**



DEPARTMENT OF PHYSICS

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COURSE OUTCOME (COS)

Name of the Course	Course Outcomes
Mechanics	<p>Co 1 : Students can realize the motion of an object in Gravitational field.</p> <p>Co 2 : They will be able to understand the role of moment of inertia of an object in its rotational motion.</p> <p>CO 3 : The gravitational force and its influence in our everyday life could be understood</p> <p>CO 4 : To understand the atmospheric pressure and its variation with altitude.</p> <p>CO 5 : To study the Kepler's laws of planetary motions, Newton's law of gravitation.</p>
Major Practical-I	<p>CO 1 : Use effectively optical instruments like Microscope and telescope.</p> <p>CO 2 : Also they would develop the skill of taking the readings in experiments for heat, sound, light.</p> <p>CO 3: Student will get the knowledge on determining various constants and presentation skill in the form of record note submission.</p>
<u>Properties of Matter and Sound</u>	<p>CO 1: The students gain the knowledge on elastic behavior of solids.</p> <p>CO 2: Students are able to apply their knowledge on elastic properties to beams.</p> <p>CO 3: Students are able to evaluate the behavior of liquids with respect to surface tension and viscosity.</p> <p>CO 4: Students gain the knowledge on SHM, reverberation.</p> <p>CO 5: The students could know the technique of the production and uses of ultrasonic.</p>

<p>THERMAL PHYSICS</p>	<p>CO 1: Demonstrate knowledge-based competencies in the fields of Thermodynamics and Statistical Mechanics</p> <p>CO 2: Keynotes of Classical and Quantum Statistical Physics.</p> <p>CO 3: Also Students will demonstrate a mastery of the core knowledge base expected of Physics professionals in areas of Thermal Physics.</p> <p>CO 4: To understand the Debye Theory</p> <p>CO 5: To grasp the concepts Maxwell-Boltzmann, Bose-Einstein and Fermi-Dirac distribution laws.</p>
<p>SKBC II Mini Project(Group Project)</p>	<p>CO 1: Students acquire the focused attention on a particular task in a stipulated time.</p> <p>CO 2: Students could develop the organizational skill and leadership quality.</p> <p>CO 3: Students will get the exposure on the outside world for checking the availability of</p> <p>CO 4: Components and means of purchasing the quality Products.</p>
<p>Major Practical-II</p>	<p>CO 1: Use effectively optical instruments like Microscope and Telescope.</p> <p>CO 2: Also they would develop the skill of taking the readings in Experiments for heat and light.</p> <p>CO 3: Student will get the knowledge on determining various constants and presentation skill in the form of record note submission.</p>

<p style="text-align: center;">OPTICS</p>	<p>CO 1: Describe the types of lenses and classify various defects occurs in lens</p> <p>CO 2: Demonstrate the application of light and various optical devices</p> <p>CO 3: Identify and analyze the optical phenomenon like interference, diffraction and polarization.</p> <p>CO 4: To gain skill Fresnel's diffraction at a straight edge and circular aperture</p> <p>CO 5: To apply the elliptically and circularly polarized light.</p>
<p style="text-align: center;">NMEC-I BIO PHYSICS</p>	<p>CO 1: The students should be able to interpreting elastic nature of muscles and its bio motion.</p> <p>CO 2: The knowledge of chromatography could be understood.</p> <p>CO 3: The students are able to analyses glucose transport into the intestinal.</p> <p>CO 4: To learn bio energetic of coupled reactions , photo synthesis, membrane transport , membrane permeability</p> <p>CO 5: To apply the electrocardiogram, arterial blood pressure, electrical activity of the heart, pumping activity of heart</p>
<p style="text-align: center;">ATOMIC AND NUCLEAR PHYSICS</p>	<p>CO 1: Students will be able to describe theories explaining the structure of atoms and the origin of the observed spectra.</p> <p>CO 2: And also they can able to identify atomic effect such as Zeeman Effect and Stark effect.</p>

	<p>CO 3: They would be summarizing different types of atomic spectra.</p> <p>CO 4: They should be able to explain the observed dependence of atomic spectral lines on externally applied electric and magnetic fields.</p> <p>CO 5: They can analyze nuclear reaction and their application.</p>
<p>FUNDAMENTALS OF ELECTRONICS</p>	<p>CO 1: Students should be able to analysis resistive circuits and working of diodes.</p> <p>CO 2: They can be able to design amplifier and oscillator circuits.</p> <p>CO 3: Students can also construct the circuits that provide mathematical operations and multi vibrations.</p> <p>CO 4: To apply the single stage RC coupled amplifier.</p> <p>CO 5: To apply the Sub tractor ,Integrator , Differentiator, D/A converter, Binary weighted method.</p>
<p>ELECTRICITY AND MAGNETISM</p>	<p>CO 1: The use of Coulomb's law and Gauss' law for the electrostatic force</p> <p>CO2 : The relationship between electrostatic field and electrostatic potential</p> <p>CO 3: The use of Faraday's law in induction problems</p> <p>CO 4: The basic idea of transient and alternating current</p>

	CO 5: To apply the Discharge of a capacitor through an Inductor and Resistor in series LCR circuit.
NMEC-II Non- conventional Energy Resources	<p>CO 1: Describe the environmental aspects of non conventional energy resources,</p> <p>CO 2: Know the necessity of renewable energy resources,</p> <p>CO 3: Appreciate the need of solar energy, Wind Energy and the various components used in energy generation and know the classifications.</p> <p>CO 4: Understand the concept of Biomass energy resources and their classification, types of biogas Plants- applications.</p> <p>CO 5: Compare Solar, Wind and bio energy systems, their prospects, Advantages and limitations, Acquire the knowledge of geothermal principles and applications.</p>
PYTHON PROGRAMMING	<p>CO 1: Students should be able to master an understanding of scripting and the contributions of scripting languages.</p> <p>CO 2: They could be master an understanding of Python especially the object-oriented concepts.</p> <p>CO 3: They should also be master an understanding of the built in objects of Python</p> <p>CO 4: To grasp the concepts Inheritance, Special Methods, Data Hiding</p> <p>CO 5: To inculcate Exception Defining clean Up Actions.</p>

<p>Communication Electronics</p>	<p>CO 1: After the completion of the course the student will be able to acquire knowledge in modulations.</p> <p>CO 2: They are also able to know the different types communication like satellite, fiber, and telephone systems.</p> <p>CO 3: To understand the satellite communications system.</p> <p>CO 4: To inculcate the Fiber optic communications.</p> <p>CO 5: To gain knowledge the cellular Telephone System and paging systems</p>
<p>DIGITAL ELECTRONICS</p>	<p>CO 1: Identify the function of digital devices</p> <p>CO 2: Describe the needs of static and dynamic charges and prepare to design electrical devices for storing it</p> <p>CO 3: Write down the evolution of digital technology</p> <p>CO 4: Identify the basic hardware components and assess its function</p> <p>CO 5: To apply the Binary up-down counter.</p>
<p>MICROPROCESOR AND ITS APPLICATIONS</p>	<p>CO 1: Write programs to run on 8085 microprocessor based systems and Design system using memory chips and peripheral chips for 8 bit 8085 microprocessor.</p> <p>CO 2: Also students will be able to understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors</p>

	<p>CO 3: To apply the largest number and smallest number in a data array, Sum of N numbers, Multiplication.</p> <p>CO 4: To apply the Counter/Timer.</p> <p>CO 5: To apply the Interfacing of 7-Segment LED display (Display of decimal numbers)</p>
<p>QUANTUM MECHANICS AND RELATIVITY</p>	<p>CO 1: Students will be able to connect a theory with the corresponding experiment.</p> <p>CO 2: Students will be able to understand the necessary and development of quantum mechanics.</p> <p>CO 3: Ability will be gained by the students in understanding various concepts in relativistic theory.</p> <p>CO 4: To grasp the concept the application of Schrödinger's equation time independent form .</p> <p>CO 5: To understand the special theory of relativity – postulates – Lorenz transformation equations.</p>
<p>SOLID STATE PHYSICS</p>	<p>CO 1: To get through understanding of the crystal lattice and its types.</p> <p>CO 2: An insight into the Bragg's law and its importance.</p> <p>CO 3: Prepare an account of various defects in a crystal.</p> <p>CO 4: Gain the knowledge on magnetic, dielectric, semiconducting and superconducting materials.</p>

	CO 5: Able to discuss the exotic properties of solids at the nano-scale and CNT and uses Also they would be able to perform structure determination of simple structures.
EC-III 8051 MICROCONTROLLER ARCHITECTURE AND PROGRAMMING	CO 1: Explain the need of microcontroller CO 2: Describe architecture and operation of microcontroller 8051 CO3: Develop assembly language programs using instruction set of 8051 CO 4: Develop programs using I/O port CO 5: Timers and serial ports
Major Practical- IV	CO 1: The students are able to handle the optical instruments like capacitor, coil, and resistor. CO 2: Also they would develop the skill of taking the readings in experiments based on electrical and light. CO 3: They should also able to get knowledge in digital devices. CO 4: Student will be able to write program using 8085 microprocessor.
ALLIED PHYSICS –I for Mathematics	CO :1 Identify the properties of solid , liquid and gas CO :2 Analyze scalar and vector parameters in physics CO :3 Describe the dynamics of planets and objects under various gravitational forces CO :4 Apply and analyze the properties of optical range for industrial and research developments CO :5 To learn the physical optics

<p style="text-align: center;">ALLIED PHYSICS -II (For B.Sc., Mathematics Students)</p>	<p>CO :1 Identify the function of digital devices</p> <p>CO :2 Describe the needs of static and dynamic charges and prepare to design electrical devices for storing it</p> <p>CO :3 Write down the evolution of digital technology</p> <p>CO :4 Identify the basic hardware components and assess its function</p> <p>CO :5 To apply Universality of NAND and NOR gate.</p>
<p style="text-align: center;">ALLIED PHYSICS -I (For B.Sc., Chemistry Students</p>	<p>CO 1: Identify the properties of solid , liquid and gas</p> <p>CO 2: Analyze scalar and vector parameters in physics</p> <p>CO 3: Describe the dynamics of planets and objects under various gravitational forces</p> <p>CO 4: Apply and analyze the properties of optical range for industrial and research developments</p> <p>CO 5: To Understand the Interference in thin films.</p>
<p style="text-align: center;">AC-III ALLIED PHYSICS -II (For B.Sc., Chemistry Students)</p>	<p>CO :1 Identify the function of digital devices</p> <p>CO :2 Describe the needs of static and dynamic charges and prepare to design electrical devices for storing it</p> <p>CO :3 Write down the evolution of digital technology</p>

	<p>CO :4 Identify the basic hardware components and assess its function</p> <p>CO :5 To apply Universality of NAND and NOR gate.</p>
<p>AC-II ALLIED PHYSICS –I (For B.Sc., Mathematics (I Semester) and Chemistry (III Semester) Students)</p>	<p>CO 1: Understand the concepts and use research equipment (Microscope, Oscilloscope, etc.)</p> <p>CO 2 : Work independently and function as a team.</p> <p>CO 3: Develop communication skills (oral, graphic and written).</p> <p>CO 4: Apply a methodology for materials selection to scientific problems.</p>
<p>APPLIED PHYSICS – I</p>	<p>CO 1: Students should be able to apply the idea of transistors</p> <p>CO 2: Students can be evaluating the electronic devices for specific applications.</p> <p>CO 3: Students can be able to perform various conversion processes in digital electronics.</p> <p>CO 4: They can analyze and design various combinational and sequential circuits.</p> <p>CO 5: They learn the combinational circuits.</p>
<p>AC-III APPLIED PHYSICS – II (For B.Sc., Computer Science Students)</p>	<p>CO 1: Understand the basic working of 8051, which is the basic of all microcontroller</p> <p>CO2: Know the working nature of microcontroller architecture, and programming techniques.</p> <p>CO 3: Know the fundamentals of port programming and interfacing techniques</p>

	<p>CO 4: Learn the techniques of serial port programming in 8051 and on interrupts.</p> <p>CO 5: To apply 8051 Interrupts for the Programming.</p>
<p>APPLIED PHYSICS PRACTICAL- II (For B.Sc., Computer Science Students- 2019 onwards</p>	<p>CO 1: Understand the concepts and use research equipment (Microscope, Oscilloscope, etc.)</p> <p>CO 2: Design and conduct experiments that probe materials properties.</p> <p>CO 3: Work independently and function as a team.</p> <p>CO 4: Develop communication skills (oral, graphic and written).</p>