

Department of Physics
Lakhimpur Girls' College

Programmes Offered:

The Department of **Physics** offers three year Bachelor in Physics Programme comprising of six semesters viz. 1st, 2nd, 3rd, 4th, 5th and 6th. For evaluation and grading, Choice Based Credit System (CBCS) as prescribed by the Dibrugarh University is adopted.

Programme Outcome (PO): Bachelor in Physics

After completion of the three years Bachelor programme in Physics (B.Sc in Physics) the students will able to:

PO-1:	Acquire knowledge and understand the major concepts in all of the prescribed courses in Physics.
PO-2:	Solve problems in different branches of physics by acquiring theoretical and practical knowledge of the respective branches.
PO-3:	Know the importance of physics in our life and apply their scientific knowledge to design, study, analysis, and records the results of Physics experiments.
PO-4:	Enter different field of physics for higher study by considering their choices and interests.
PO-5:	Create awareness about the importance and impact of Physics in the society and develop scientific attitude among the non-scientific community.
PO-6:	To inculcate the scientific temperament in the students to combat harmful and destructive social evils.
PO-7:	Use modern techniques, delicate equipments and modern software.
PO-8:	Built the spirit of innovation for future research workers.
PO-9:	Acquire language skills in both written and communicative expressions in scientific expressions.

Programme Specific Outcomes (PSO):

I. Major/ Honours in Physics:	
Semester	Outcomes

1 st Semester	<p>After completion of the programme students will be able to:</p> <p>PSO-1: Develop the requisite mathematical skills of a student to understand the fundamental topics in Physics.</p> <p>PSO-2: Develop the ability of a student to critically analyze a topic.</p> <p>PSO-3: Prepare a student for more advanced topics in Physics by providing a solid grip over the fundamental concepts in Physics.</p> <p>PSO-4: Demonstrate the use and importance of computational methods in Physics and enable a student to construct a Physics problem computationally.</p> <p>PSO-5: Introduce the basic concepts of mechanics.</p> <p>PSO-6: Understand conservation laws as they are the fundamental laws of nature and will help them in realizing a crucial phenomenon of nature- symmetry.</p> <p>PSO-7: Understand simple harmonic oscillator as it is a unique mechanical problem and will help them to understand the advanced treatment in quantum mechanics and modern Physics.</p> <p>PSO-8: Develop knowledge of special relativity to understand relativistic formulation of modern theories.</p> <p>PSO-9: Develop knowledge of mechanics which will help students in their everyday life.</p>
2 nd Semester	<p>After completion of the programme students will be able to:</p> <p>PSO-1: Develop the basic theoretical knowledge as well as experimental skills of the students on electrical networking.</p> <p>PSO-2: Handle and repair instruments based on electric and magnetic field effects.</p> <p>PSO-3: Enable the students to analyze different phenomena due to the interaction of light with light and matter.</p> <p>PSO-4: Train the students to use different optical instruments.</p> <p>PSO-5: Help the students to understand various natural phenomena using different apparatus in the laboratory.</p>
	<p>After completion of the programme students will be able to:</p>

3 rd Semester	<p>PSO-1: Develop the requisite mathematical skills to understand some of the fundamental topics (slightly more advanced than those in Mathematical Physics I) in Physics.</p> <p>PSO-2: Develop the ability of a student to critically analyze a topic.</p> <p>PSO-3: Prepare a student for more advanced topics in Physics by providing a solid grip over the fundamental concepts in Physics.</p> <p>PSO-4: Enable a student to understand the use and importance of computational / numerical methods in Physics and enable a student to construct a Physics problem computationally.</p> <p>PSO-5: Apply the laws of thermodynamics in real world problems.</p> <p>PSO-6: Conduct scientific problems and experiments on thermodynamics and allied disciplines.</p> <p>PSO-7: Demonstrate a working knowledge of the physical principles in Thermal Physics.</p> <p>PSO-8: Identify and understand digital electronic principles and systems.</p> <p>PSO-9: Apply the knowledge to analyze and apply digital circuits in solving circuit level problems.</p> <p>PSO-10: Build real life applications using digital systems.</p>
4 th Semester	<p>After completion of the programme students will be able to:</p> <p>PSO-1: Develop mathematical skills of a student to understand some of the fundamental topics (slightly more advanced than those in Mathematical Physics I and II).</p> <p>PSO-2: Develop the ability of a student to critically analyze a topic.</p> <p>PSO-3: Handle more advanced topics in Physics by acquiring a solid grip over the fundamental concepts in Physics.</p> <p>PSO-4: Enable a student to understand the use and importance of computational/ numerical methods in Physics and to construct a problem computationally.</p> <p>PSO-5: Pursue advanced studies in Physics.</p> <p>PSO-6: Understand and appreciate the theory of modern physics</p>

	<p>PSO-7: Develop the ability to apply it in solving simple problems in Quantum Mechanics (QM), structure of atoms, Laser, and Nuclear Physics.</p> <p>PSO-8: Learn the foundation knowledge of analog electronic systems.</p> <p>PSO-9: Learn the working and applications of PN junction and bipolar junction transistors (BJT).</p> <p>PSO-10: Learn to analyze circuits containing PN junction and BJT along with the application of BJT as amplifiers and oscillators.</p> <p>PSO-11: Develop basic knowledge of operational amplifier and its applications</p>
5 th Semester	<p>The course in this semester will:</p> <p>PSO-1: Learn how to apply quantum mechanics to solve physical systems in different areas of science.</p> <p>PSO-2: Know about the physical behavior of materials.</p> <p>PSO-3: Learn how the scientific behavior of materials can be used for human applications.</p> <p>PSO-4: Equip a student with basic concepts of solid state Physics so that the knowledge can be applied for further development of the subject.</p> <p>PSO-5: Enable a student to work in both theoretical and experimental aspects of solid state Physics.</p> <p>PSO-6: Help the students in thorough learning of the concepts associated to the course through the laboratory experiments.</p>
6 th Semester	<p>After completion of the programme, this course will enable a student to:</p> <p>PSO-1: Solve problems relevant to interfaces between media with defined boundary conditions.</p> <p>PSO-2: Use Maxwell's equations to describe the behaviour of electromagnetic waves in vacuum as well as medium.</p> <p>PSO-3: Describe states and methods of polarization and analyze the polarization state of a light source.</p> <p>PSO-4: Solve problems relevant to interfaces between media with defined boundary conditions.</p>

	<p>PSO-5: Use Maxwell's equations to describe the behaviour of electromagnetic waves in vacuum as well as medium.</p> <p>PSO-6: Describe states and methods of polarization and analyze the polarization state of a light source.</p>
<p>II. Electives: Discipline Specific Electives (DSE) [Students with Physics Major/Honours]</p>	
Semester	Outcomes
<p>5th semester</p> <p>DSE1-</p> <p>Course title: <i>CLASSICAL DYNAMICS</i></p>	<p>After completing the course, This course will enable the students to :</p> <p>PSO-1: Prepare for the study of modern Physics.</p> <p>PSO-2: Develop basic theoretical ingredients necessary to study advanced theoretical courses like quantum mechanics.</p> <p>PSO-3: Learn a number of mathematical techniques applicable to Physics problems in different areas.</p> <p>PSO-4: Develop knowledge of special relativity which is essential to understand the relativistic formulation of modern theories.</p>
<p>5th semester</p> <p>DSE2-</p> <p>Course title: <i>PHYSICS OF DEVICES AND INSTRUMENTS</i></p> <p>OR</p> <p>Course title: <i>ASTRONOMY & ASTROPHYSICS</i></p>	<p>After completing this course, a student will be able to :</p> <p>PSO-1: Develop knowledge about various devices like UJT, FET etc. and to use these devices for different applications.</p> <p>PSO-2: Design and analyse filter circuits, power supply FET amplifiers etc.</p> <p>PSO-3: Develop the basic knowledge of IC fabrications, data communication standards and communication systems.</p> <p style="text-align: center;">OR</p> <p>This course will</p> <p>PSO-1: Equip the students with basic knowledge of the Astrophysics.</p> <p>PSO-2: Create interest to the subjects of Astrophysics and to pursue further higher studies in the subject concerned in future.</p>

<p style="text-align: center;">OR</p> <p>Course title: <i>PHYSICS OF EARTH</i></p>	<p>PSO-3: Develop the critically analyzing ability, which may motivate the students to solve any challenging physical problem in future.</p> <p style="text-align: center;">OR</p> <p>This course will enable the students to</p> <p>PSO-1: Develop critical and quantitative thinking of scientific issues related to the study of cosmology and Earth Sciences.</p> <p>PSO-2: Understand the basic principles of various processes of the Earth.</p> <p>PSO-3: Apply the acquired knowledge on the study of the Universe.</p> <p>PSO-3: Pursue career in Earth Sciences, Cosmology etc.</p> <p>PSO-5: Understand the contemporary dilemmas on Earth and Environmental issues like climate change, air pollution, deforestation etc.</p>
<p>6th Semester DSE3-</p> <p>Course title: <i>NUCLEAR AND PARTICLE PHYSICS</i></p>	<p>After the end of the course, this course will enable the students to:</p> <p>PSO-1: Develop knowledge regarding nuclear and elementary particle as well as properties and phenomena related to them.</p> <p>PSO-2: Successfully apply the same knowledge in solving problems in the field of nuclear and particle Physics.</p>
<p>6th Semester DSE4-</p> <p>Course title: <i>NANO MATERIALS AND APPLICATIONS</i></p> <p style="text-align: center;">OR</p> <p>Course title: <i>EXPERIMENTAL TECHNIQUES</i></p>	<p>The aim of the course is to:</p> <p>PSO-1: Gather sufficient knowledge about the fascinating behaviour of nano materials and tuning of such properties for different applications.</p> <p>PSO-2: Obtain information on experimental methodologies with necessary theoretical background, which may be useful for pursuing further study on the areas of nanoscience and technology.</p> <p style="text-align: center;">OR</p> <p>This course will enable the students to</p> <p>PSO-1: Develop the theoretical as well as experimental knowledge on different instruments and instrumentation.</p> <p>PSO-2: Develop the knowledge of some measurement techniques and data and error analysis technique, which is very essential for a Physics</p>

	<p>student.</p> <p>PSO-3: Handle different electrical network based instruments.</p>
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Course outcomes (COC):

I. Major/ Honours in Physics:	
Course Outcomes (CO) B.Sc. Physics Semester-I	
Course	Outcomes:
<p>Physics-C I:</p> <p>Mathematical Physics- I</p>	<p>At the completion of this course, a student will be able to:</p> <p>CO-1: Write a problem in Physics in the language of Mathematics.</p> <p>CO-2: Identify a range of diverse mathematical techniques to formulate and solve a problem in basic Physics.</p> <p>CO-3: Analyze some of the basic mathematical concepts and methods.</p> <p>CO-4: Apply the knowledge and understanding of these mathematical methods to solve problems in a number of elementary branches of Physics like mechanics, electromagnetic theory, statistical Physics, thermal Physics etc.</p> <p>CO-5: Learn computer programming and numerical analysis and know its role in solving problems in Physics.</p> <p>CO-6: Construct a problem in Physics computationally.</p>

<p>Physics-C II: Mechanics</p>	<p>At the completion of this course, a student will be able to:</p> <p>CO-1: Understand the basic concepts and ideas in mechanics- e.g. motion, force and torque, mass and moment of inertia, linear and angular momentum, kinetic energy and potential energy etc. by parallel studies of linear dynamics and rotational dynamics.</p> <p>CO-2: Understand the basic conservation laws by studying them in various mechanical systems including collisions, oscillations, gravitational systems etc.</p> <p>CO-3: Analyze simple harmonic oscillator in detail.</p> <p>CO-4: Study planetary motions as a central force problem.</p> <p>CO-5: Understand the concept of frame of reference, importance of relative transformations and invariance of laws of Physics.</p> <p>CO-6: Realize the consequences of non-inertial frame in our real physical world.</p> <p>CO-7: Know about the peculiar phenomena of special relativity which are not seen in Newtonian relativity and to understand the concept of space-time.</p>
<p>Course Outcomes B.Sc. Physics Semester-II</p>	
<p>Physics-C III: Electricity and Magnetism</p>	<p>At the completion of this course, a student will be able to:</p> <p>CO-1: Gain basic knowledge of electricity and magnetism.</p> <p>CO-2: Understand the electrical and magnetic properties of matter in brief.</p> <p>CO-3: Understand the effect of electric field on magnetic field and the effect of magnetic field on current.</p> <p>CO-4: Understand the basic principle of the electrical circuit (AC) circuit and electrical networking.</p> <p>CO-5: Acquire the basic theoretical as well as experimental skill on electrical networking.</p>
	<p>At the completion of this course, a student will be able to:</p>

<p>Physics-C IV: Wave and Optics</p>	<p>CO-1: 1. Learn the basics of wave motion.</p> <p>CO-2: Know about the behavior of light due to its wave nature.</p> <p>CO-3: Identify and understand different phenomena due to the interaction of light with light and matter.</p> <p>CO-4: Analyze some of the fundamental laws and principles of light which is used in many important optical instruments.</p>
<p>Course Outcomes B.Sc. Physics Semester-III</p>	
<p>Physics-C V: Mathematical Physics-II</p>	<p>At the completion of this course, a student will be able to:</p> <p>CO-1: Write a problem in Physics (slightly more advanced than those in Mathematical Physics I) in the language of Mathematics.</p> <p>CO-2: Identify a range of diverse mathematical techniques to formulate and solve a problem in basic Physics.</p> <p>CO-3: Analyze some of the useful mathematical methods.</p> <p>CO-4: Apply the knowledge and understanding of these mathematical methods to solve problems in a number of fundamental topics in Physics.</p> <p>CO-5: Construct a problem in Physics computationally.</p>
<p>Physics-C VI: Thermal Physics</p>	<p>This course will enable the students to:</p> <p>CO-4: Develop knowledge on the classical laws of thermodynamics and their application.</p> <p>CO-4: Use the knowledge of thermodynamics in various applications in allied fields like Materials science, Condensed matter Physics, Atmospheric Physics, Solar Physics, etc.</p> <p>CO-4: Probe questions in varied fields of Physics, chemistry and biology based on principles of Thermal Physics.</p> <p>CO-4: Use the concept of thermodynamics in real world experiences.</p> <p>CO-4: Develop critical and analytical thinking of the student on thermodynamics and allied disciplines.</p>

Physics-C VII: Digital Systems and Applications	This course will enable a student to : CO-1: Know about the basic laboratory equipment electronics. CO-2: Understand basic digital electronics concepts and devices. CO-3: Analyze digital circuits.
Course Outcomes B.Sc. Physics Semester-IV	
Physics-C VIII: Mathematical Physics-III	At the completion of this course, a student will be able to: CO-1: Write a problem in Physics (slightly more advanced than those in Mathematical Physics I and II) in the language of mathematics. CO-2: Identify a range of diverse mathematical techniques/ideas to formulate, simplify and solve some problems in Physics. CO-3: Analyze some of the useful mathematical ideas and techniques. CO-4: Apply the knowledge and understanding of these mathematical methods to solve problems in a number of fundamental topics in Physics. CO-5: Construct a problem in Physics computationally and use simulations to design an experiment.
Physics-C IX: Elements of Modern Physics	At the completion of this course, a student will be able to: CO-1: Understand the theoretical basis for the understanding of quantum Physics as the basis for dealing with microscopic phenomena. CO-2: Apply concepts of 20th Century Modern Physics to deduce the structure of atoms. CO-3: Explain the wave-particle duality of the photon. CO-4: Analyze the structure of matter at its most fundamental. CO-5: Develop insight into the key principles and applications of Nuclear.
Physics-C X: Analog System & Applications	At the completion of this course, a student will be able to: CO-1: Know about the basics of semiconductor PN junction, its various types and its application to different electronic circuits. CO-2: Understand bipolar junction transistor and its applications as amplifier and oscillators. CO-3: Familiarize with operational amplifiers, its applications and

	analysis. CO-4: Develop knowledge about analog to digital and digital to analog conversion techniques.
Course Outcomes B.Sc. Physics Semester-V	
Physics-C XI: Quantum Mechanics & Applications	At the completion of this course, a student will be able to: CO-1: Know about the development of modern Physics and the theoretical formulation of quantum mechanics.
Physics-C XII: Solid State Physics	At the completion of this course, a student will be able to: CO-1: Familiarize with fundamentals of Solid State Physics. CO-2: Know about the structural, electronic and lattice vibration dependent behavior of solids. CO-3: Learn the basic concepts in hands on mode through laboratory experiments associated with the course.
Course Outcomes B.Sc. Physics Semester-VI	
Physics-C XIII: Electromagnetic Theory	At the completion of this course, a student will be able to: CO-1: Understand the physical and mathematical principles to provide in-depth analysis of the behavior of electricity and magnetism in matter. CO-2: Apply Maxwell's equations to explain the properties of the electromagnetic wave and its interaction with matter. CO-3: Analyze the principles and processes related to polarization, interference, and diffraction along with their applications to the development of wave-guide and optical fibers.
Physics-C XIV: Statistical Mechanics	The Statistical Mechanics is one of the most important branches of Physics which is required to understand the properties of matter in bulk on the basis of the dynamical behaviors of its microscopic constituents. As such the objectives of this course are to: CO-1: Introduce the basic concepts of Statistical Mechanics so that students will be able to cope-up with higher level of such course in future. CO-2: Develop the critically thinking ability of students to understand the

	<p>diverse physical phenomena.</p> <p>CO-3: Develop the interest and ability among students to solved challenging physical problems by the application of techniques of Statistical Mechanics in future.</p>
<p>Course Outcomes B.Sc. Physics Semester-V & Semester-VI</p>	
<p>II. Electives: Discipline Specific Electives (DSE) [For students Major/Honours in Physics]</p>	
<p>5th Semester</p> <p>PHYSICS DSE -I</p> <p>Course title: <i>CLASSICAL DYNAMICS</i></p>	<p>This course will enable the students to:</p> <p>CO-1: Understand the underlying facts in the development of classical mechanics and the advantages of its formulation over Newtonian mechanics.</p> <p>CO-2: Describe mechanics of a system in terms of equation of motion.</p> <p>CO-3: Understand Lagrangian formulation and Hamiltonian formulation of mechanics and their applications in mechanical problems.</p> <p>CO-4: Study the theoretical analysis of systems oscillating with small amplitudes.</p> <p>CO-5: Observe the peculiar phenomena when transformed from Newtonian relativity to special relativity and to understand the concept of space-time.</p>
<p>5th Semester</p> <p>PHYSICS DSE -2</p> <p>Course title: <i>PHYSICS OF DEVICES AND INSTRUMENTS</i></p> <p style="text-align: center;"><i>OR,</i></p> <p>PHYSICS DSE -2</p>	<p>After completing this course, a student will be able to:</p> <p>CO-1: Know about various devices like UJT, FET, MOSFET, CMOS etc. and its application to different electronic circuits.</p> <p>CO-2: Design rectifiers, passive and active filter, multivibrators etc.</p> <p>CO-3: Familiarize with the IC fabrication techniques.</p> <p>CO-4: Learn about digital data communication standards and also about communication systems.</p> <p style="text-align: center;">OR</p> <p>Astrophysics (and Astronomy) is the most fascinating and rapidly</p>

<p>Course title: <i>ASTRONOMY AND ASTROPHYSICS</i></p> <p style="text-align: center;"><i>OR,</i></p> <p>PHYSICS DSE-2 course title: <i>PHYSICS OF EARTH</i></p>	<p>growing field of Physics at present. In fact Astronomy is the oldest science among all physical sciences. Although in recent years due to sophistication of theoretical as well as observational techniques this field of Physics grows unprecedentedly, still there are lots of regions of this field which are remained unexplored till now. After completing this course, a student will be able to:</p> <p>CO-1: Introduce the fundamental concepts of Astrophysics to the interested students.</p> <p>CO-2: Motivate students to pursue the further study in future in these challenging, fascinating and important fields of Physics.</p> <p style="text-align: center;">OR</p> <p>This course will enable the students to :</p> <p>CO-1: Acquire knowledge on origin and evolution of the Earth and Universe.</p> <p>CO-2: Acquire knowledge on structure, composition and dynamics of the Earth from crust up to space.</p> <p>CO-3: Understand the interaction among different components of the Earth.</p> <p>CO-4: Get familiar with the weather and climate systems, climate change.</p> <p>CO-5: Increase people awareness of the scientific process of the Earth and its role in the exploration of the Universe.</p>
<p>6th Semester</p> <p>PHYSICS DSE -3</p> <p>Course title: <i>NUCLEAR AND PARTICLE PHYSICS</i></p>	<p>This course will enable the students to:</p> <p>CO-1: Understand various concepts in Nuclear Physics.</p> <p>CO-2: Emphasize on the existing connections with other domains of Physics, in particular Quantum Mechanics, Mathematical Physics and Particle Physics. .</p>
<p>6th Semester</p> <p>PHYSICS DSE -4</p> <p>Course title: <i>NANO MATERIALS</i></p>	<p>This course will enable the students to:</p> <p>CO-1: Provide a systematic coverage and insight into the promising area of nano materials in order to facilitate the understanding of the nature and prospects for the field.</p> <p>CO-2: Provide information about various synthesis and</p>

<p><i>AND APPLICATION</i></p> <p style="text-align: center;"><i>OR,</i></p> <p>PHYSICS DSE -4 Course title: <i>EXPERIMENTAL TECHNIQUES</i></p>	<p>characterization techniques of nano materials.</p> <p>CO-3: Discuss optical and electronic transport properties of nano materials.</p> <p>CO-4: Discuss applications of nano materials.</p> <p style="text-align: center;">OR</p> <p>This course will enable the students to:</p> <p>CO-1: Enhance experimental knowledge.</p> <p>CO-2: Develop the theoretical as well as experimental knowledge of different instruments and instrumentation.</p> <p>CO-3: Enhance the knowledge of some measurement techniques and data and error analysis technique.</p>
<p>III. SKILL ENHANCEMENT COURSES (SEC) [For Student without Major/ Honours in any subject]</p>	
<p>3rd Semester</p> <p>PHYSICS-SEC-1 Course Title: <i>ELECTRICAL CIRCUITS AND NETWORK SKILLS</i></p>	<p>This course will enable the students to:</p> <p>CO-1: Design and troubleshoot certain electrical circuits and domestic appliances along with the understanding of the working of those appliances.</p> <p>CO-2: Do electrical wiring and repairing.</p> <p>CO-3: Develop the skill for various electrical repairing and servicing purposes.</p>
<p>4th Semester</p> <p>PHYSICS-SEC-2 Course Title: <i>APPLIED OPTICS</i></p>	<p>This course will enable the students :</p> <p>CO-1: Acquire knowledge about various optoelectronic devices and their applications.</p> <p>CO-2: Understand the basics of Laser and their uses.</p> <p>CO-3: Understand about Fourier transform spectroscopy and will learn to use this technique for various purposes.</p> <p>CO-4: Learn the use of optical fibres and related information.</p>
<p>5th Semester</p> <p>PHYSICS-SEC-3 Course Title: <i>COMPUTATIONAL PHYSICS SKILLS</i></p>	<p>This course will enable the students to :</p> <p>CO-1: Apply their knowledge on computer programming and numerical analysis in solving real physical problems.</p> <p>CO-2: Develop basic knowledge of FORTRAN programming language and LINUX operating system will make them enabled dealing scientific computing in different areas of</p>

<p style="text-align: center;">OR</p> <p>PHYSICS-SEC-3</p> <p>Course Title: <i>BASIC INSTRUMENTATION SKILLS</i></p>	<p style="text-align: center;">Physics.</p> <p style="text-align: center;">OR</p> <p>CO-1: Design and analyse electronic instrumentation system to interface with standard industrial sensors/transducers.</p> <p>CO-2: Effectively design instrumentation systems that conform to industrial regulations.</p> <p>CO-3: Analyse and specify component and system requirements for installation of instrumentation systems.</p> <p>CO-4: Calculate electrical noises in measurement systems.</p> <p>CO-5: Implement techniques to reduce electrical noises in measurement circuits.</p> <p>CO-6: Select sensors for applications to specific measurement tasks.</p> <p>CO-7: Explain the precision and accuracy of a measure as it pertains to international standards.</p> <p>CO-8: Design AC and DC Null circuits for application to a wide range of measurements.</p>
<p>6th Semester</p> <p>PHYSICS-SEC-4</p> <p>Course Title: <i>RENEWABLE ENERGY AND ENERGY HARVESTING</i></p> <p style="text-align: center;">OR,</p> <p>PHYSICS-SEC-4</p> <p>Course Title <i>:PHYSICS WORKSHOP SKILL</i></p>	<p>This course will enable the students to :</p> <p>CO-1: Learn in depth the application of heat transfer processes and thermodynamic cycles to various energy harvesting systems.</p> <p>CO-2: Pull together the background knowledge in real life examples and equip them to design and evaluate various energy based models with efficient applications.</p> <p>CO-3: Pursue a career in energy technology.</p> <p style="text-align: center;">OR</p> <p>CO-1: Develop the theoretical as well as experimental knowledge on different instruments and instrumentation.</p> <p>CO-2: Develop the knowledge of some measurement techniques and data and error analysis technique, which is very essential for physics student.</p> <p>CO-3: Handle different electrical network based instruments.</p>