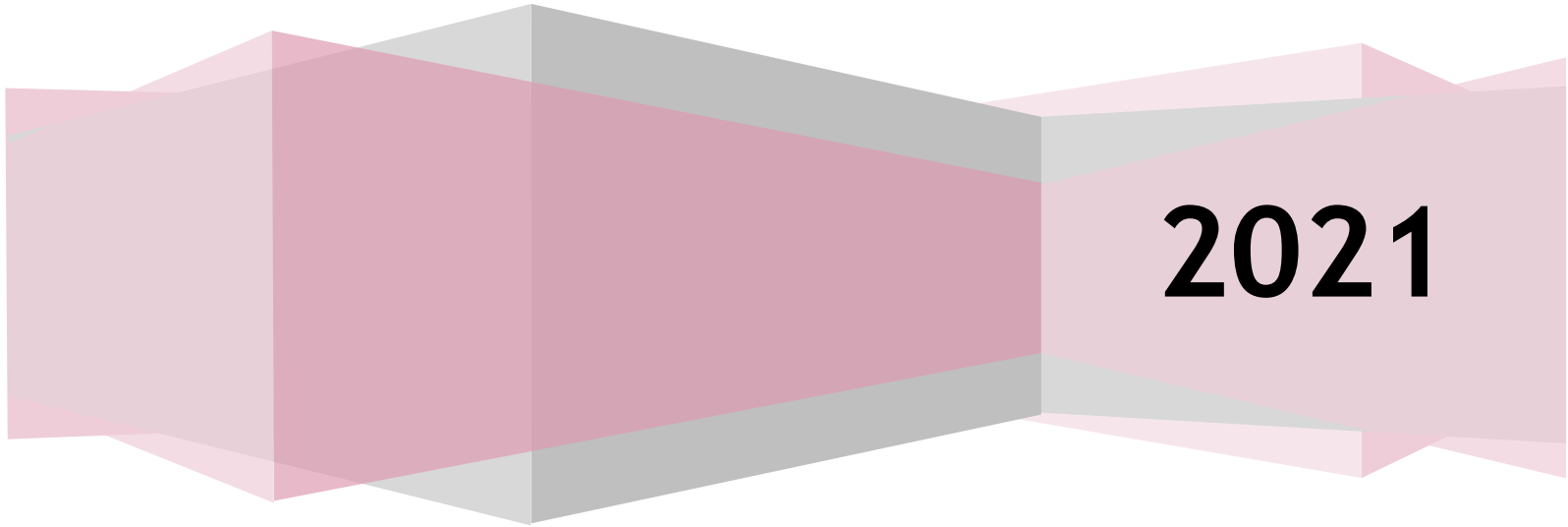


Bidhan Chandra College, Rishra



Department of Physics

Model Reference: University of Calcutta, Syllabus for Physics (General) (Under CBCS)



2021

Programme Offered	Program Outcome
<p style="text-align: center;">B. Sc General in Physics</p>	<p>After successful completion of three year degree program in Physics:</p> <ol style="list-style-type: none"> 1. Student will demonstrate an understanding of core knowledge in physics, including the major premises of classical mechanics, Electronics, Statistical Physics, E&M and Modern Physics. 2. Students will demonstrate an understanding of the impact of physics and science on society. Student can identify the most relevant physics concepts in approaching a problem that might arise in everyday life, and devise a strategy in order to arrive at the solution. Additionally, achieve an understanding of the connection between key physics concepts, technological applications. 3. Students become highly cognizant of the expansion of the learning in their respective field which enables them to get admitted to the premier institutes of the country for higher studies. 4. Encouraging the students to pursue research avenues related to the subject either in the academic or in the professional sphere that may lead to a vibrant knowledge. Student can utilize a wide range of printed and electronic resources and information technologies to support their research on physical systems and present those results in the context of the current understanding of physical phenomena. 5. Imparting personality development skills to the students that are likely to help them in their professional and personal lives, thus making them responsible and sincere citizens. 6. Encouraging the students to coordinate with one another in a team environment and perform well as a team rather than trying to excel individually at the cost of group performance efficiency.

Class/Paper/Semester	Title	Course Outcome
B.Sc(G)/CC1 or GE1/SEM-1	Mechanics (Theory + Practical)	The branch of physics that deals with the action of forces on bodies and with motion comprised of kinetics, statics, and kinematics. The theoretical and practical application of this science to machinery, mechanical appliances, etc.
B.Sc(G)/CC2 or GE2/SEM-2	Electricity and Magnetism (Theory + Practical)	<p>Electromagnets are very widely used in electric and electromechanical devices, including:</p> <ul style="list-style-type: none"> ➤ Motors and generators. ➤ Transformers. ➤ Relays. ➤ Electric bells and buzzers. ➤ Loudspeakers and headphones. ➤ Actuators such as valves. ➤ Magnetic recording and data storage equipment: tape recorders, VCRs, hard disks. ➤ MRI machines etc.
B.Sc(G)/CC3 or GE3/SEM-3	Thermal Physics and Statistical Mechanics (Theory + Practical)	Thermal physics is the combined study of thermodynamics, statistical mechanics, and kinetic theory of gases. This umbrella-subject is typically designed for physics students and functions to provide a general introduction to each of three core heat-related subjects. Statistical mechanics, branch of physics that combines the principles and procedures of statistics with the laws of both classical and quantum mechanics, particularly with respect to the field of thermodynamics.
B.Sc(G)/SEC A-1/SEM-3 or SEM-5	Scientific Writing -Project type (Theory + Project) Technical Skill	Research papers, articles and other scientific works are usually written using LaTeX.
B.Sc(G)/SEC A-2/SEM-3 or SEM-5	Renewable energy and Energy Harvesting (Theory) Knowledge Skill	Energy harvesting is the conversion of ambient energy present in the environment into electrical energy . It is identical in principle to large-scale renewable energy generation, for example, solar or wind power, but very different in scale. Energy harvesting is useful as it offers a means of powering electronics where there are no conventional power sources . It also eliminates the need for replacing batteries frequently and running wires to end applications.

B.Sc(G)/CC4 or GE4/SEM-4	Waves and Optics (Theory + Practical)	It is used in many areas of science, such as astronomy, engineering, oceanography, physics, and fibre optics. Popular applications of interferometry in industry include the measurement of small displacements, refractive index changes, and surface irregularities.
B.Sc(G)/SEC B-1/SEM-4 or SEM-6	Arduino -Project type (Theory + Project) Technical Skill	Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online.
B.Sc(G)/SEC B-2/SEM-4 or SEM-6	Electrical Circuits and Network skills (Theory) Knowledge Skill	Every electric circuit, regardless of where it is or how large or small it is, has four basic parts: an energy source (AC or DC), a conductor (wire), an electrical load (device), and at least one controller (switch). By learning this part a student could acquire following skills- <ul style="list-style-type: none"> ➤ Installing and maintaining electrical systems, equipment and devices. ➤ Using and maintaining hand and power tools, such as screwdrivers, pliers and drills. ➤ Repairing wiring systems. ➤ Installing electrical conduits, cables, tubing.
B.Sc(G)/DSE A-1/SEM-5 OR, B.Sc(G)/DSE A-2/SEM-5	Analog Electronics (Theory + Practical)	Analog electronics is a branch of electronics that deals with a continuously variable signal. It's widely used in radio and audio equipment along with other applications where signals are derived from analog sensors before being converted into digital signals for subsequent storage and processing.
	Modern Physics (Theory)	It is based on the two major breakthroughs of the twentieth century: relativity and quantum theory. The term modern physics means up-to-date physics. This term refers to the breakthrough that happened after Newton's laws, Maxwell's equations, and thermodynamics, these laws which are known as “classical” physics.

<p>B.Sc(G)/DSE B-1/SEM-6 OR, B.Sc(G)/DSE B-2/SEM-6</p>	<p>Digital Electronics (Theory + Practical)</p>	<p>Digital Electronics is the study of electronic circuits that are used to process and control digital signals. In contrast to analog electronics, where information is represented by a continuously varying voltage, digital signals are represented by two discrete voltages or logic levels (0 or 1).</p>
	<p>Nuclear & Particle Physics (Theory)</p>	<p>Nuclear physics is an important pursuit because the study of the nucleus of the atom is at the heart of our ability to understand the universe. It provides answers and expands our knowledge of both the infinitely small and the extremely large.</p> <p>Particle physics, or high-energy physics, Study of the fundamental subatomic particles, including both matter (and antimatter) and the carrier particles of the fundamental interactions as described by quantum field theory. Particle physics is concerned with structure and forces at this level of existence and below.</p>