SACRED HEART COLLEGE (AUTONOMOUS)

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Ready for
Every Good Work

A Don Bosco Institution of Higher Education, Founded in 1951 * Affiliated to Thiruvalluvar University, Vellore * Autonomous since 1987

Accredited by NAAC (4th Cycle – under RAF) with CGPA of 3.31 / 4 at 'A+' Grade

Name of the Programme: M.Sc Physics

S No	Title Of The Paper	Course Code	Course Objectives	Course Outcomes	Relevance
1	Electronics Experiments	PP810	• To familiarize students with various Electronic devices and their specifications. • To observe characteristics of electronic devices • To understand the design aspects of oscillator circuits • To familiarize the students with devices and circuit principles with special focus on applications related to instrumentations and measurements. • Develop skill for Design and Testing of different types of Electronic subsystems using Analog and Digital IC's.	• Elucidate the basic operation of various power semiconductor devices. • Describe and analyze the characteristics of different electronic devices. • Measure voltage, frequency and phase of any waveform using CRO. • Design and implement various digital circuits. • Develop ability to diagnose faults and their rectification.	local, developmental needs
2	Elective: Biophysics	P823C	• To explore the fundamental background of physics behind the cellular and molecular structure and its dynamics. • To provide an insight knowledge about the application of light and bio compatible nonmaterial in the field of bio physics. • To know about the applications of bio sensors. • To make the students to understand the application of light and non-ionizing radiation effect on biological system • To make the students to know about the physiochemical techniques used for the detection and treatment of various diseases.	• Explain physics behind the dynamics, molecular structure of proteins, amino acids and conduction system. • Acquire the knowledge on various types of proteins, enzymes and its function in the bio metabolic activities. • Acquire the knowledge of application of bio Nano sensors in diagnosing. • Distinguish the effect of light, ionizing and non-ionizing radiation in the biological system • Differentiate the physical and chemical approach of diagnosing and application of such techniques.	Local developmental needs

3	Self-Study Paper: Ultrasonics And Its Applications		• To impart the fundamental concepts of ultrasonic waves and their sources • To enable the students to understand the various instruments on generation ultrasonics waves and their applications. • to make the students to understand the influence of ultrasonic waves on molecular interactions studies in liquid systems • To learn the non-destructive testing and its importance in the industrial sectors. • To make them understand the medical applications of ultrasounds.	• acquire fundament knowledge of ultrasonic waves and the sources of ultrasound. • Learn and understand different ultrasonic instrumentations and general applications in the field of industries and measurements. • Gain the knowledge of ultrasonic waves in finding molecular interactions in multi-component liquid mixtures. • recognize different types of ultrasonic non-destructive testing and their industrial applications. • Grasp the idea about clinical importance of ultrasound in Ophthalmology, obstetrics and gynecology, cardiovascular, biopsy and tissue related treatments.	Local developmental needs
4	Self-Study Paper: Crystal Growth Techniques		• To Understand the fundamentals of crystal growth and nucleation • To Analyze the low temperature method of crystal growth • To study fundamentals and advantages of temperature gradient/SR method • To acquire a qualitative idea on the Gel method for growing crystals • To Understand the melt growth technique of crystal growing	• Acquire a qualitative idea on various parameters considered for growing crystals • Apply and understand laboratory technique of growing crystal from solution • Design the experimental setup for SR method and to grow technologically important crystals • Illustrate the mechanism of gel growth and its advantages. • Understand different techniques of crystal growth from melt	Local developmental needs
5	Self-Study Paper: Electrical Appliances		• To impart knowledge of basic electrical/electronic components • To understand the electrical components in our household applications • To apply the series and parallel electrical connections in the household appliances • To understand the principle and design of	• Identify the different electrical/electronic components for house hold applications • Realize the electrical wiring for household electrical connections. • Explain the construction and working mechanism of some household electrical appliances.	Local developmental needs

			electric iron household appliances in our day to day life. • To understand the fundamentals and working of consumer electronics appliances.	• Infer the knowledge, principle and working mechanism of house hold electrical appliances • To explain the principle and working mechanism of electrical appliances	
6	Electronic Instrumentation Techniques	P1015	• To expose the students to the principles and working of Transducers • To make the students to understand the digital instrumentation used in measurement of various physical quantities. • To make the students to understand the working of electrical and magnetic measurement instruments and to provide basic knowledge about the working of Compositional analysis instruments and Bio-medical instruments. • To impart the knowledge on analytical instrumentation for the identification of various elements. • To make the students on the application of various instrumentation used for the measurement of potentials developed by the body cells including ECG, EMG etc	• Understand the principles and working of Transducers and Analog and Digital Instruments used in measurement of various physical quantities. • Distinguish the analog and digital instrumentation and its working principle. • Apply the knowledge of electrical and magnetic property of the material in the measurement of conductivity • Understand the difference in the approach of absorption and emission property of radiation in detecting the elements of the surface and also the emission of electrons. • Acquire the knowledge of blood pressure, potentials produced by the cells of various organs including heart, muscle, brain and its measurement.	Local developmental needs
7	Modern Physics Practicals	PP1009	• To relate theoretical concepts to real world applications and experiments. • To familiarize the students with optics, sound, magnetic and electric laboratory experiments and procedures.	• Explain the theoretical concepts and working principle of the experiments. • Organize the experiments and observe the reliable data. • Analyze the observed data and calculate the value of a physical quantity without error.	Local developmental needs

			• To observe reliable data and record the observations. • To organize the measurements, estimate errors and write the laboratory record. • To develop an understanding of basic concepts and hands on training of advanced experiments.	• Measure the velocity of ultrasonic waves in different liquid medium. • Apply physics concepts and ideas from lab to real time problems.	