

# Course Outcome (CO)

## UNDERGRADUATE PROGRAMMES

### B. Sc. Physics (Model I)



**HENRY BAKER COLLEGE, MELUKAVU**

# COURSE OUTCOME (CO)

## B. Sc. Physics (Model I)

SEMESTER 1			
Course Code	Course Title	Course Outcomes (CO)	
EN1CCT01	Fine-tune Your English	C01	To introduce the students to the basics of grammar, usage and effective communication
		C02	To confidently use English in both written and spoken forms
		C03	To use English for formal communication effectively
EN1CCT02	Pearls from the Deep	C01	To introduce students to the different genres of literature and to the niceties of literary expression
		C02	To appreciate and enjoy works of literature
		C03	To appreciate the aesthetic and structural elements of literature
ML1CCT01	Kadhasahithyam	C01	Students get knowledge and ideas from different story styles
		C02	Gain knowledge about the distinction between traditional and modern stories.
		C03	Get exposed to various forms of narration and representation in literature
		C04	Understand specificity and universality of fiction.
HN1CCT01	Prose and One Act Plays	C01	Increase interest in Prose
		C02	Get introduced with Minor genres like One Act Plays
		C03	Develop knowledge in Literary forms
PH1CRT01	Methodology and perspectives of Physics	C01	to examine the evolution of Physics and hence open up their minds to new ideas and ways of thinking
		C02	to make use of measuring and instrumental tools for practicing Physics
		C03	to realise the necessity of measurements in physics, estimation of errors and uncertainty
		C04	to estimate error and check the accuracy of measurement while performing a laboratory experiment
CH1CMT01	Basic Theoretical And Analytical Chemistry	C01	Students get more ideas about the atomic structure, chemical bonding, periodic properties of atoms and molecules.
		C02	To familiarise students with basic principles of analytical chemistry.
		C03	Students can apply these skills in the analysis of experimental data in chemistry practical
MM1CMT01	Partial Differentiation, Matrices, Trigonometry and Numerical Methods	C01	To familiarize students with functions of several variable, partial differentiation.
		C02	Students are getting detailed knowledge about Matrices, eigen values of matrices , Cayley Hamilton theorem
		C03	To familiarize students with expansion of various trigonometric functions, C+iS method .
		C04	Students can find non integer solution to a function using bisection method, Method of False position, Iteration Method, Newton – Raphson Method.
SEMESTER 2			

EN2CCT03	Issues that Matter	C01	To sensitize the learners to contemporary issues of concern
		C02	To identify the major issues of contemporary significance
		C03	To respond rationally and positively to the issues raised
		C04	To internalize the values imparted through the selections
EN2CCT04	Savouring the Classics	C01	To introduce the students to the taste of time-tested world classics
		C02	To become familiar with the classics from various lands
		C03	To understand the features that go into the making of a classic
ML2CCT02	Kavitha	C01	To understand the various aspects of society through literary texts representing different periods and culture.
		C02	To introduce students about genres and trends of Malayalam poetry
		C03	Students learn the various stages of developments of Malayalam poems.
HN2CCT01	Short Stories and Novel	C01	Obtain knowledge about history of Hindi Literature
		C02	Generate interest in Hindi Literature.
		C03	Develop Story and novel Reading Skills
PH2CRT02	Mechanics and Properties of Matter	C01	acquire a basic knowledge of the core physics principles in mechanics
		C02	differentiate between translational and rotational motion, find the moment of inertia of different shapes and objects
		C03	understand the principles of elasticity and solve practice problems through evaluating the relationship between stress and strain
		C04	develop basic skills to perform experiments for understanding different concepts in properties of matter
		C05	to understand the concept of conservation of energy and angular momentum and should be able to solve problems related to it
		C06	to understand the principles that govern the flow of fluids
		C07	understand the physical concepts behind SHM and should be able to reproduce the theory to physical systems that execute SHM
CH2CMT02	Basic Organic Chemistry	C01	To develop the fundamental concepts of organic chemistry and stereochemistry of reactions
		C02	The course aims to study the mechanism of organic reactions
		C03	To understand the fundamentals of various classes of synthetic and natural polymers, its biodegradability and environmental hazards
CH2CMP01	Volumetric Analysis Practical	C01	To familiarize students different estimation technique.
		C02	To study the effect of various indicators
		C03	To familiarize students with accuracy of the given experiment
MM2CMT01	Integral Calculus and Differential Equation	C01	Students became able to find solution of three dimensional structure using Cross-Sections, Volumes using Cylindrical shells, Arc lengths, Areas of surfaces of Revolution.
		C02	Students became able to calculate area using double and triple integrals
		C03	Students became able to calculate solution of ordinary and partial differential equations.
<b>SEMESTER 3</b>			
	Literature	C01	To sensitize students to the various ways in which literature serves as a platform for forming, consolidating, critiquing and re-working the issue of 'identity' at various levels
		C02	To recognize the subtle negotiations of Indigenous and Diasporic

EN3CCT05	and/as Identity		identities with-in Literature
		C03	To realise the fissures, the tensions and the interstices present in South Asian regional identities
		C04	To understand the emergence of Life Writing and alternate/alternative/marginal identities
ML3CCT03	Drishyakala Sahithyam	C01	Ability to appreciate and evaluates various types of plays and other visual arts.
		C02	Students should be familiar with the plays of master-dramatist.
		C03	Students will have an awareness of different art forms and depth of literature.
HN3CCT01	Poetry, Grammar and Translation	C01	To be able to understand the introductory concepts of Hindi Grammar
		C02	Know the famous Hindi Poets and poems in Ancient and Modern era
		C03	Develop translation skills from English to Hindi and Hindi to English
PH3CRT03	Optics, Laser and Fiber Optics	C01	realise the physics behind different optical phenomena in everyday life
		C02	explain different properties of light like interference, diffraction and polarization in the context of wave nature of light, compare diffraction pattern observed with single, double and n-slits, describe different types of polarized light
		C03	explain why thin films like oil, soap bubble form colourful patterns
		C04	understand the characteristics of laser, explain working principle of different types of lasers, and summarize applications of laser in diverse fields
		C05	gain knowledge about the physical structure of optic fibers, distinguish between different types of optical fibers, demonstrate its application in communication systems
CH3CMT03	Physical Chemistry I	C01	To familiarise the students with basic concepts in physical chemistry.
		C02	To understand various basic concepts and practice of physical chemistry.
MM3CMT01	Vector Calculus, Analytic Geometry and Abstract Algebra	C01	Students get knowledge about vector valued functions and integration on vector fields.
		C02	The concept of Polar coordinates, Conic sections, Conics in Polar coordinates became familiar
		C03	Students get an introduction to Abstract Algebra by studying groups, subgroups, groups of permutations and homomorphism.
<b>SEMESTER 4</b>			
EN4CCT06	Illuminations	C01	To acquaint the learners with different forms of inspiring and motivating literature
		C02	To realise the need to maintain a positive attitude to life
		C03	To evaluate and overcome setbacks based on the insights that these texts provide
		C04	To understand the emergence of Life Writing and alternate/alternative/marginal identities
ML4CCT04	Malayala Gadhya Rachanakal	C01	To acquire knowledge about Malayalam literature its cultural themes, literary periods and key artistic features.
		C02	Students should be able to identify, analyse, interpret and describe the critical ideas, values and themes that appear in literary and cultural texts.

HN4CCT01	<b>Drama and Long Poem</b>	<b>C01</b>	Develop creative thinking in students
		<b>C02</b>	Get information about the well-known poets and Poems in Hindi
		<b>C03</b>	Make aware about the social issues through literature
PH4CRT04	<b>Semiconductor Physics</b>	<b>C01</b>	illustrate the internal mechanism of a semiconductor and semiconductor devices
		<b>C02</b>	solve numerical problems relating to various semiconductor parameters
		<b>C03</b>	design circuits containing semiconductor devices and their combinations
		<b>C04</b>	analyse different circuits containing semiconductor devices
		<b>C05</b>	explain basics of semiconductor diodes its characteristics, application to rectifiers and voltage regulators
CH4CMT05	<b>Physical Chemistry II</b>	<b>C01</b>	To make the concepts and methods of physical chemistry clear and interesting to students
		<b>C02</b>	To understand the theory of modern branches like spectroscopy.
CH4CMP02	<b>Physical chemistry experiments</b>	<b>C01</b>	To develop their experimental and data analysis skills through a wide range of experiments
MM4CMT01	<b>Fourier Series, Laplace Transform and Complex Analysis</b>	<b>C01</b>	Students get a brief introduction to power series and power series method for solving Differential equations, Legendre equation and Legendre polynomials $P_n(x)$ .
		<b>C02</b>	To familiarize students with Laplace Transform, Inverse Laplace transform, Linearity, Shifting, transforms of Derivatives and Integrals, Differential Equations, Differentiation and Integration of Transforms.
		<b>C03</b>	To make the students understand the concept of complex numbers, polar form of complex numbers, integration of complex numbers
<b>SEMESTER 5</b>			
PH5CRT05	<b>Electricity and Electrodynamics</b>	<b>C01</b>	investigate different AC circuits containing inductance, capacitance and resistance
		<b>C02</b>	evaluate divergence and curl in various electrostatic and magnetostatic problems
		<b>C03</b>	compute electric field and electric potential of discrete and continuous charge distribution
		<b>C04</b>	analysing alternating emf and alternating current (AC)
		<b>C05</b>	distinguish ideal voltage and current sources and apply network theorems on various networks
		<b>C06</b>	infer that Maxwell's four equations explain all of electromagnetic theory
		<b>C07</b>	examine generation and nature of thermoelectricity
PH5CRT06	<b>Classical and Quantum Mechanics</b>	<b>C01</b>	relate the quantum mechanics concepts to diverse fields in physics
		<b>C02</b>	solve classical systems like linear harmonic oscillator, atwoods machine etc. using Lagrangian and Hamiltonian methods
		<b>C03</b>	develop mathematical insights to advanced quantum theories
		<b>C04</b>	understand the terms operators, eigen values, expectation value
		<b>C05</b>	realise the concept behind wave - particle duality, uncertainty principle
		<b>C06</b>	understand the development of time dependent and time independent Schrodinger equation
		<b>C01</b>	analyse the use of digital electronics in mathematical computation
		<b>C02</b>	examine the logical background of functioning of various electronic

<b>PH5CRT07</b>	<b>Digital Electronics and Programming</b>		circuits
		<b>C03</b>	simplify boolean expressions using boolean rules and laws
		<b>C04</b>	apply De-Morgan's theorem to solve various logic circuits
		<b>C05</b>	develop logic to write C++ programs to solve quadratic equations, generation of Fibonacci series etc.
	<b>C06</b>	understanding circuit elements using flip-flops, registers and A/D converters	
<b>PH5CRT08</b>	<b>Environmental Physics And Human Rights</b>	<b>C01</b>	investigate how and why things happen, and make their own decisions about complex environmental issues
		<b>C02</b>	examine how their decisions and actions affect the environment, builds knowledge and skills necessary to address complex environmental issues, as well as ways we can take action to keep our environment healthy and sustainable for the future. It encourages character building, and develops positive attitudes and values
		<b>C03</b>	develop the sense of awareness among the students about the environment and its various problems and to help the students in realizing the inter-relationship between man and environment and helps to protect the nature and natural resources
		<b>C04</b>	develop basic knowledge about environment acts and the social norms that provides unity with environmental characteristics and create positive attitude about the environment.
<b>PH5OPT02</b>	<b>Physics in Daily Life</b>	<b>C05</b>	examine the physical principles behind various physical phenomena and the scientific issues in daily life
		<b>C06</b>	criticize and express views in logical and effective ways
		<b>C07</b>	appraise the significance of knowing 'physics' in everyday phenomena.
<b>SEMESTER 6</b>			
<b>PH6CRT09</b>	<b>Thermal and Statistical Physics</b>	<b>C01</b>	develop a basic knowledge required to design devices involving the interchange between heat and work or the conversion of material to produce heat
		<b>C02</b>	analyse various thermodynamic processes and work done in each of these processes
		<b>C03</b>	distinguish reversible and irreversible processes.
		<b>C04</b>	analyse the working of a Carnot engine
		<b>C05</b>	calculate the change in entropy in various reversible and irreversible processes Upon completion of the course, the learners will be able ....
		<b>C06</b>	discuss the various statistical distributions followed by different particles
<b>PH6CRT10</b>	<b>Relativity and Spectroscopy</b>	<b>C01</b>	develop a conceptual understanding of special and general theories of relativity
		<b>C02</b>	distinguish atomic and molecular behaviors that gives rise to various spectroscopic methods
		<b>C03</b>	develop a working knowledge of spectroscopic methods currently used in research fields
		<b>C04</b>	develop a basic knowledge of principles behind NMR and ESR spectroscopy and its applications in diverse fields
<b>PH6CRT11</b>	<b>Nuclear, Particle</b>	<b>C01</b>	categorize various elementary particles and their impact on physical processes
		<b>C02</b>	investigate various nuclear and subatomic phenomena
		<b>C03</b>	relate the interaction of subatomic particles, cosmological

	<b>Physics and Astrophysics</b>		processes and stellar evolution processes.
		<b>C04</b>	discuss various nuclear models like shell model and liquid drop model
		<b>C05</b>	basic knowledge of different nuclear reactors
<b>PH6CRT12</b>	<b>Solid State Physics</b>	<b>C01</b>	analyse different concepts in solid state physics
		<b>C02</b>	examine the effect of electric and magnetic fields on materials
		<b>C03</b>	develop a conceptual understanding of internal mechanism of semiconducting materials and their fabrication
		<b>C04</b>	sketch the crystal structure and assess the working of superconducting materials
		<b>C05</b>	grasp basic ideas of ionic, hydrogen, metallic and van der Waals's bonding
		<b>C06</b>	distinguish between metals, insulators and semiconductors
		<b>C07</b>	define intrinsic and extrinsic semiconductors, understand the principles behind LED and photodiodes
<b>PH6CBT01</b>	<b>Information Technology</b>	<b>C01</b>	apply current technical concepts and practices in the core information technologies of networking, web page designing and data management
		<b>C02</b>	select and apply current techniques, skills, and tools necessary for computing practice
		<b>C03</b>	integrate IT-based solutions into the user environment effectively
		<b>C04</b>	discuss IT based concepts effectively with a range of audiences using a range of modalities including written, oral and graphical