



SAFA | COLLEGE OF
ARTS AND SCIENCE

Affiliated to University of Calicut | ISO 9001-2015 Certified

PROGRAMME OUTCOMES
PROGRAMME SPECIFIC OUTCOMES
COURSE OUTCOMES

PHYSICS



NO	PROGRAM OUTCOME
PO 01	Acquire adequate knowledge of the subject
PO 02	Craft a foundation for higher learning
PO 03	Be initiated into the basics of research
PO 04	Imbibe sound moral and ethical values
PO 05	Become conscious of environmental and societal responsibilities
PO 06	Attain skills for communication and career
PO 07	Learn to tolerate diverse ideas and different points of view
PO 08	Become empowered to face the challenges of the changing universe

Above mentioned programme outcomes are more specifically split in to the Programme Specific Outcomes.

NO	PROGRAM SPECIAL OUTCOME
PSO 01	Understand the basic concepts of fundamentals of mechanics, properties of matter and electrodynamics
PSO 02	Understand the theoretical basis of quantum mechanics, relativistic physics, nuclear physics, optics, spectroscopy, solid state physics, astrophysics, statistical physics, photonics and thermodynamics
PSO 03	Understand and apply the concepts of electronics in the designing of different analog and digital circuits
PSO 04	Understand the basics of computer programming and numerical analysis
PSO 05	Apply and verify theoretical concepts through laboratory experiments

SEMESTER I

SL. NO.	NAME OF COURSE	COURSE OUTCOME	
1	PHY1 B01: MECHANICS – I	CO1	Understand and apply the basic concepts of Newtonian Mechanics to Physical Systems
		CO2	Understand and apply the basic idea of work-energy theorem to physical systems
		CO3	Understand and apply the rotational dynamics of rigid bodies
2	CHE1C01: GENERAL CHEMISTRY	CO1	To understand and to apply the theories of quantitative and qualitative analysis
		CO2	To understand the theories of chemical bonding.
		CO3	To appreciate the uses of radioactive isotopes.
		CO4	To understand the importance of metals in biological systems.

SEMESTER II

SL. NO.	NAME OF COURSE	COURSE OUTCOME	
1	PHY 2 B02: MECHANICS – II	CO1	Understand the features of non-inertial systems and fictitious forces
		CO2	Understand and analyze the features of central forces with respect to planetary forces
		CO3	Understand the basic ideas of Harmonic Oscillations
		CO4	Understand the analyze the basic concepts of wave motion
2	CHE2C02: PHYSICAL CHEMISTRY	CO1	To understand the importance of free energy in defining spontaneity.
		CO2	To realise the theories of different states of matter and their implication.
		CO3	To understand the basic principles of electrochemistry.

SEMESTER III

SL. NO.	NAME OF COURSE	COURSE OUTCOME	
1	PHY3B03: ELECTRODYNAMICS I	CO1	Understand and apply the fundamentals of vector calculus
		CO2	Understand and analyze the electrostatic properties of physical systems
		CO3	Understand the mechanism of electric field in matter.
		CO4	Understand and analyze the magnetic properties of physical systems
		CO5	Understand the mechanism of magnetic field in matter.
2	CHE3C03: ORGANIC CHEMISTRY	CO1	To understand the basic concepts involved in reaction intermediates.
		CO2	To realise the importance of optical activity and chirality.
		CO3	To appreciate the importance of functional groups and aromatic stability
		CO4	To understand the basic structure and importance of carbohydrates, nucleic acids, alkaloids and terpene

SEMESTER IV

SL. NO.	NAME OF COURSE	COURSE OUTCOME	
1	PHY4B04: ELECTRODYNAMICS II	CO1	Understand the basic concepts of electrodynamics
		CO2	Understand and analyze the properties of electromagnetic waves
		CO3	Understand the behavior of transient currents
		CO4	Understand the basic aspects of ac circuits
		CO5	Understand and apply electrical network theorems
2	CHE4C04:PHYSICAL AND APPLIED CHEMISTRY	CO1	To understand the basic concepts behind colloidal state and nanochemistry
		CO2	To understand the importance of green chemistry and pollution prevention
		CO3	To appreciate the importance of different separation methods and spectral techniques
		CO4	To understand the extent of chemistry in daily life.
3	PHY4B05: PRACTICAL I	CO1	Apply and illustrate the concepts of properties of matter through experiments
		CO2	Apply and illustrate the concepts of electricity and magnetism through experiments
		CO3	Apply and illustrate the concepts of optics through experiments
		CO4	Apply and illustrate the principles of electronics through experiments
4	CHE4C05(P):CHEMISTRY PRACTICAL	CO1	To understand the basic concepts of inter group separation
		CO2	To enable the students to develop analytical and preparation skills

SEMESTER V

SL. NO.	NAME OF COURSE	COURSE OUTCOME	
1	PHY5B06: COMPUTATIONAL PHYSICS	CO1	Understand the Basics of Python programming
		CO2	Understand the applications of Python modules
		CO3	Understand the basic techniques of numerical analysis
		CO4	Understand and apply computational techniques to physical problems
2	PHY5B07: QUANTUM MECHANICS	CO1	Understand the particle properties of electromagnetic radiation
		CO2	Describe Rutherford – Bohr model of the atom
		CO3	Understand the wavelike properties of particles
		CO4	Understand and apply the Schrödinger equation to simple physical systems
		CO5	Apply the principles of wave mechanics to the Hydrogen atom
3	PH5B08: OPTICS	CO1	Understand the fundamentals of Fermat's principles and geometrical optics
		CO2	Understand and apply the basic ideas of interference of light
		CO3	Understand and apply the basic ideas of diffraction of light
		CO4	Understand the basics ideas of polarization of light
		CO5	Describe the basic principles of holography and fibre optics
4	PHY5B09: ELECTRONICS (ANALOG & DIGITAL)	CO1	Understand the basic principles of rectifiers and dc power supplies
		CO2	Understand the principles of transistor
		CO3	Understand the working and designing of transistor amplifiers and oscillators
		CO4	Understand the basic operation of Op – Amp and its applications
		CO5	Understand the basics of digital electronics

SEMESTER VI

SL. NO.	NAME OF COURSE	COURSE OUTCOME	
1	PHY6B10: THERMODYNAMICS	CO1	Understand the zero and first laws of thermodynamics
		CO2	Understand the thermodynamics description of the ideal gas
		CO3	Understand the second law of thermodynamics and its applications
		CO4	Understand the basic ideas of entropy
		CO5	Understand the concepts of thermodynamic potentials and phase transitions
2	PHY6B11: STATISTICAL PHYSICS, SOLID STATE PHYSICS, SPECTROSCOPY & PHOTONICS	CO1	Understand the basic principles of statistical physics and its applications
		CO2	Understand the basic aspects of crystallography in solid state physics
		CO3	Understand the basic elements of spectroscopy
		CO4	Understand the basics ideas of microwave and infra-red spectroscopy
		CO5	Understand the fundamental ideas of photonics
3	NUCLEAR PHYSICS AND PARTICLE PHYSICS	CO1	Understand the basic aspects of nuclear structure and fundamentals of radioactivity
		CO2	Describe the different types of nuclear reactions and their applications
		CO3	Understand the principle and working of particle detectors
		CO4	Describe the principle and working of particle accelerators
		CO5	Understand the basic principles of elementary particle physics
4	PHY6B14 (EL3): MATERIALS SCIENCE	CO1	Understand the basic ideas of bonding in materials
		CO2	Describe crystalline and non-crystalline materials
		CO3	Understand the types of imperfections and diffusion mechanisms in solids
		CO4	Describe the different properties of ceramics and polymers
		CO5	Describe the different types of material analysis techniques
5	PRACTICAL II	CO1	Apply and illustrate the concepts of properties of matter through experiments
		CO2	Apply and illustrate the concepts of

			electricity and magnetism through experiments
		CO3	Apply and illustrate the concepts of optics and spectroscopy through experiments
		CO4	Apply and illustrate the principles of heat through experiments
7	PHY6B16: PRACTICAL III	CO1	Apply and illustrate the principles of semiconductor diode and transistor through experiments
		CO2	Apply and illustrate the principles of transistor amplifier and oscillator through experiments
		CO3	Apply and illustrate the principles of digital electronics through experiments
		CO4	Apply and illustrate the principles of digital electronics through experiments
8	PHY6B17(P) – PROJECT	CO1	Understand research methodology
		CO2	Understand and formulate a research project
		CO3	Design and implement a research project
		CO4	Identify and enumerate the scope and limitations of a research project