BALAGARH BIJOY KRISHNA MAHAVIDYALAYA

(DEPARTMENT OF PHYSICS)

CBCS Course Plan (With Effective from 2017-18 onwards

Name of programme: B.Sc. Physics General

No. of Courses in Philosophy General: 10 [CC----0 4 + DSE ---0 2 + SEC---04]

Total Credits in B.Sc. Physics General: 44 [(CC   4 X6) + (DSE 2 X 6) + (SEC   4 X 2) = 44]

SEMESTER	COURSE NAME	CREDIT	MARKS
SEMESTER I	MECHANICS	THEORY 04 PRACTICAL 02	THEORY – 40 INTERNAL ASSESSMENT – 15 PRACTICAL – 20
SEMESTER II	ELECTRICITY AND MAGNETISM	THEORY 04 PRACTICAL 02	THEORY – 40 INTERNAL ASSESSMENT – 15 PRACTICAL – 20
SEMESTER III	THERMAL PHYSICS AND STATISTICAL MECHANICS	THEORY 04 PRACTICAL 02	THEORY – 40 INTERNAL ASSESSMENT – 15 PRACTICAL – 20
	RENEWABLE ENERGY AND ENERGY HARVESTING	THEORY 02	Theory - 40, Internal Assessment – 10
SEMESTER IV	WAVE AND OPTICS	THEORY 04 PRACTICAL 02	THEORY – 40

| | | | | INTERNAL ASSESSMENT – 15

PRACTICAL – 20 |
|---|---|---|---|---|
| | **WEATHER FORECASTING** | **THEORY** | **02** | **Theory - 40,** Internal Assessment – 10 |
| **SEMESTER V** | **ELEMENTS OF MODERN PHYSICS** | **THEORY** **PRACTICAL** | **04** **02** | **THEORY – 40** **INTERNAL ASSESSMENT – 15** **PRACTICAL – 20** |
| | **COMPUTATIONAL PHYSICS** | **THEORY** | **02** | **Theory - 40,** Internal Assessment – 10 |
| **SEMESTER VI** | **DIGITAL AND ANALOG CIRCUITS AND INSTRUMENTATION** | **THEORY** **PRACTICAL** | **04** **02** | **THEORY – 40** **INTERNAL ASSESSMENT – 15** **PRACTICAL – 20** |
| | **ELECTRICAL CIRCUITS AND NETWORK SKILLS** | **THEORY** | **02** | **Theory - 40,** Internal Assessment – 10 |

SEMESTER- I				
Course Name:- MECHANICS CC-1A				
Course Name	**Topics**	**Number of Lectures**	**Name of the Teacher's**	**Curriculum Delivery**
CC-1A MECHANICS theory	Vector, ordinary differential equation, Law of motion, Momentum and energy, Rotational motion, Gravitation,	40	Uday Ghosh	ICT PPT – 04 Internal exam- 01 Assignment:- 01

	Oscillation, Elasticity, Special Theory of relativity			
CC-1A MECHANICS practical	1.Measurements of length (or diameter) using vernier caliper, screw gauge and travelling microscope 2.To determine Young's Modulus by flexure method. 3. To determine the Modulus of Rigidity of a wire by Maxwell's needle / dynamical method	12	Uday Ghosh	

SEMESTER- II

Course Name:-   ELECTRICITY AND MAGNETISM   CC-1B

CC-1B ELECTRICITY AND MAGNETISM theory	Vector Analysis, Electrostatics, Magnetism Electromagnetic Induction, Maxwell`s equations and Electromagnetic wave propagation	35	Uday Ghosh	ICT PPT – 03 Internal exam- 01 Assignment:- 01
CC-1B ELECTRICITY AND MAGNETISM practical	1. To determine a Low Resistance by Carey Foster's Bridge. 2.To use a Multi-meter for measuring (a)Resistances, (b)AC and DC Voltages, (c) DC Current, and (d) checking electrical fuse	10	Uday ghosh	

SEMESTER- III

Course Name:-   THERMAL PHYSICS AND STATISTICAL MECHANIC   CC-1C

CC-1C THERMAL PHYSICS & STATISTICAL MECHANICS theory	Thermodynamic Description of system, Thermodynamic Potentials, Kinetic Theory of Gases, Theory of Radiation, Statistical Mechanics	34	Uday Ghosh	ICT PPT – 03 Internal exam- 02
CC-1C THERMAL PHYSICS & STATISTICAL MECHANICS Practical	1.To determine the pressure coefficient of air by constant volume method. 2. To determine the coefficient of thermal conductivity of a good conductor by Searle's method. 3.Measurement of Planck's constant using black body radiation	12	Uday Ghosh	

SEMESTER- III				
Course Name:-		**RENEWABLE ENERGY AND ENERGY HARVESTING**		**SEC-1**
SEC-1 RENEWABLE ENERGY AND ENERGY HARVESTING	Fossil fuels and Alternate Sources of energy, Solar energy, Wind Energy harvesting, Ocean Energy, Geothermal Energy, Piezoelectric Energy harvesting, Electromagnetic Energy Harvesting	12	Uday Ghosh	ICT PPT – 01 Internal exam- 01
SEMESTER- IV				
Course Name:-		**WAVE & OPTICS**	**CC-1D**	
CC-1D WAVE AND OPTICS Theory	Superposition of Two Collinear Harmonic oscillations, Superposition of Two Perpendicular Harmonic Oscillations, Waves Motion-General, Fluids, Sound, Wave Optics, Interference, Michelson's Interferometer, Diffraction, Polarization	30	Uday Ghosh	ICT PPT—02 Internal exam-02
CC-1D WAVE AND OPTICS Practical	1.To determine the focal length of a concave lens by combination method. 2. To determine the refractive index of a liquid by travelling microscope. 3. To determine wavelength of sodium light using Newton's Rings.	16	Uday Ghosh	
SEMESTER- IV				
Course Name:-		**WEATHER FORECASTING**	**SEC-2**	
SEC-2 WHEATHER FORECASTING	Introduction to atmosphere, Measuring the weather, Weather systems, Climate and Climate Change, Basics of weather forecasting,	12	Uday Ghosh	Internal exam -01
SEMESTER- V				
Course Name:-		**ELEMENTS OF MODERN PHYSICS**	**DSE-1A**	
DSE-1A ELEMENTS OF MODERN PHYSICS Theory	Photo-electric effect and Compton scattering. De Broglie wavelength, Wave-particle duality, Heisenberg uncertainty principle-, Bohr's quantization rule and atomic stability; calculation of energy levels for hydrogen like atoms and their spectra. ;	30	Uday Ghosh	ICT PPT—03 Internal exam -01

	Schrodinger equation, One dimensional infinitely rigid box-Radioactivity,			
DSE-1A ELEMENTS OF MODERN PHYSICS Practical	1. To determine value of Boltzmann constant using V-I characteristic of PN diode. To determine value of Planck's constant using LEDs of at least 4 different colour	08	Uday Ghosh	

SEMESTER- V

Course Name:-   COMPUTATIONAL PHYSICS   SEC-3

COMPUTATIONAL PHYSICS	Introduction, Algorithms and Flowcharts, Scientific Programming, Control Statements, Programming:, Scientific word processing: Introduction to LaTeX, Visualization,	20		Internal exam -01

SEMESTER- VI

Course Name:-   DIGITAL AND ANALOG CIRCUITS AND INSTRUMENTATION   DSE-1B

DSE-1B DIGITAL AND ANALOG CIRCUITS AND INSTRUMENTATION Theory	Digital Circuits, Semiconductor Devices and Amplifiers, Bipolar Junction transistors, Operational Amplifiers (Black Box approach), Sinusoidal Oscillators, Instrumentations	30	Uday Ghosh	ICT PPT -02 Internal exam-01
DSE-1B DIGITAL AND ANALOG CIRCUITS AND INSTRUMENTATION Practical	1.To study I-V characteristics of PN diode and Zener diode. 2. To study the characteristics of a Transistor in CE configuration 3. To verify and design AND, OR, NOT and XOR gates using NAND gates.	12	Uday Ghosh	

SEMESTER- VI

Course Name:-   ELECTRICAL CIRCUITS AND NETWORK SKILLS   SEC - 4

SEC-4 ELECTRICAL CIRCUITS AND NETWORK SKILLS	Basic Electricity Principles, Understanding Electrical Circuits, Electrical Drawing and Symbols, Generators and Transformers, Electric Motors, Solid-State Devices, Electrical Protection, Electrical Wiring,	24	Uday Ghosh	ICT PPT- 01 Internal exam -01