Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Semester -I Major & Minor

Full Marks: 100 [Theoretical (ESE – 35 & CA – 15); Practical (ESE – 20 & CA – 30)] [L-T-P: 3-0-4]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Mechanics & General Properties of Matter (BSCPHYMJ101) (BSCPHYMN101)	Unit I	Vector Calculus	Dr. Madhumita Nath	August, 2024	8	CA1 – September,2024 CA2- November 2024
	Unit II	Mechanics of Single Particle	Prof. Siba Prasad Mandal	September, 2024	6	
	Unit III	Oscillations	Prof. Siba Prasad Mandal	August, 2024	4	
	Unit IV	Gravitation	Dr. Madhumita Nath	October, 2024	3	
	Unit V	Systems of particles	Prof. Siba Prasad Mandal	November, 2024	4	
	Unit VI	Rigid body Dynamics	Dr. Madhumita Nath	November, 2024	6	
	Unit VII	General properties of matter	Dr. Madhumita Nath	September, 2024	7	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Name of the Paper	Practical	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes
Mechanics & General Properties of Matter (BSCPHYMJ101) (BSCPHYMN101)	1	Determination of Young‟s modulus by method of flexure.	Prof. Siba Prasad Mandal	September, 2024	6
	2	To determine the Young's Modulus of a Wire by Optical Lever Method.	Dr. Madhumita Nath		6
	3	To determine the elastic Constants of a wire by Searle‟s method.	Prof. Siba Prasad Mandal		6
	4	To determine the value of acceleration due to gravity using Kater’s Pendulum.	Prof. Siba Prasad Mandal	November, 2024	6
	5	Determination of surface tension of a liquid by capillary-rise method.	Prof. Siba Prasad Mandal		6
	6	Determination of the rigidity modulus of a wire by statical /dynamical method.	Dr. Madhumita Nath		4

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Skill Enhancement Course

Full Marks: 50 (Practical CA – 15 & Practical ESE – 35) [L-T-P: 0-0-6]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Practical Classes	Continuous Internal Assessment in the Month of
Computer Programming in C / FORTRAN/ Python/ SciLab (BSCPHYSE 101)	Unit I	Introduction and Overview	Dr. Madhumita Nath	September, 2024	5	CA1 – September,2024 CA2- November 2024
	Unit II	Basics of scientific computing	Prof. Siba Prasad Mandal	September, 2024	5	
	Unit III	Errors and Error Analysis	Prof. Siba Prasad Mandal	November, 2024	4	
	Unit IV	Programming fundamentals	Dr. Madhumita Nath	November, 2024	12	
	Unit V	Programming 1. To check the divisibility of an integer and find a set of prime numbers. 2. Conversion of a number between decimal, binary, octal, hexadecimal number systems. 3. Find the area / perimeter of circle / square /ellipse, volume of sphere / cube etc. using userdefined functions. 4. Generation of terms, sum, ratios for arithmatic, geometric and Fibonacci series. 5. To evaluate an infinite series with pre-assigned accuracy. 6. To find the largest/second largest/smallest of a given list of numbers. Find their locations in a sequence. 7. Sorting of numbers in ascending / descending order. 8. To generate a frequency distribution, mean, mode, median (from formula), standard deviation, correlation functions etc from a given data.	Prof. Siba Prasad Mandal & Dr. Madhumita Nath		8 x 3 = 24	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

MD COURSE

Full Marks: 100 [Theoretical (ESE – 35 & CA – 15)] [L-T-P: 3-0-0]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
PHYSICAL SCIENCE (MDC101)	Unit I	**Matter and Energy**	Dr. Madhumita Nath	August, 2024	4	CA1 – September,2024
	Unit II	**Gravity, Force and Space**	Prof. Siba Prasad Mandal	September, 2024	6	
	Unit III	**Applications of Physics**	Prof. Siba Prasad Mandal	August, 2024	6	CA2- November 2024

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Semester -III Major

Full Marks: 50 [Theoretical (ESE – 35 & CA – 15)] [L-T-P: 5-1-0]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Classical Mechanics and Special Theory of Relativity (BSCHPHSC301)	Unit I	Vector Calculus Kinematics and Dynamics of Rigid Body Motion	Prof. Siba Prasad Mandal & Dr. Madhumita Nath	August, 2024	8	CA1 – September,2024
	Unit II	Lagrangian and Hamiltonian formulation of Classical Mechanics	Dr. Madhumita Nath	September, 2024	8	CA2- November 2024
	Unit III	Special Theory of Relativity	Prof. Siba Prasad Mandal	September, 2024	6	

Full Marks: 100 [Theoretical (ESE – 40 & CA – 10); Practical (ESE – 20 & CA – 30)] [L-T-P: 4-0-4]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Thermal Physics – I (BSCHPHSC302)	Unit I	Kinetic Theory of Gases	Prof. Siba Prasad Mandal	August, 2024	8	CA1 – September,2024
	Unit II	Transportation Phenomenon	Dr. Madhumita Nath	August, 2024	4	
	Unit III	Brownian Motion and its application	Prof. Siba Prasad Mandal	September, 2024	4	
	Unit IV	Real Gases	Dr. Madhumita Nath	September, 2024	4	CA2- November 2024
	Unit V	Conduction of Heat	Prof. Siba Prasad Mandal	November, 2024	4	
	Unit VI	Radiation	Dr. Madhumita Nath	November, 2024	5	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Name of the Paper	Practical	Topic	Name of Techer	To be completed during the month and year	No of Practical Classes
Thermal Physics – I (BSCHPHSC302)	1	To determine mechanical equivalent of Heat, J, by Callender and Barne‟s constant flow method.	Prof. Siba Prasad Mandal	September, 2024	4
	2	To determine the coefficient of thermal conductivity of Cu by Searle‟s Apparatus.	Dr. Madhumita Nath		4
	3	To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton‟s disc method.	Prof. Siba Prasad Mandal		4
	4	To determine the temperature coefficient of resistance/boiling point by platinum resistance thermometer.Dr. Madhumita Nath	Dr. Madhumita Nath		4
	5	To study the variation of thermo-emf of a thermocouple with difference of temperature of its two Junctions.	Prof. Siba Prasad Mandal	November, 2024	4
	6	To determine temperature co-efficient of resistance of metal/semiconductor by meter-bridge.	Dr. Madhumita Nath		4
	7	Determination of the boiling point of a liquid by Platinum resistance thermometer.	Prof. Siba Prasad Mandal		4
	8	Determination of coefficient of linear expansion by optical lever/travelling microscope.	Dr. Madhumita Nath		4
	9	Determination of pressure coefficient of air by Jolly‟s apparatus.	Prof. Siba Prasad Mandal		4

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Full Marks: 100 [Theoretical (ESE – 40 & CA – 10); Practical (ESE – 20 & CA – 30)] [L-T-P: 4-0-4]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Analog Systems and Applications (BSCHPHSC303)	Unit I	Semiconductor Diodes	Prof. Siba Prasad Mandal	August, 2024	4	CA1 – September,2024 CA2- November 2024
	Unit II	Two-terminal Devices and their Applications	Dr. Madhumita Nath	August, 2024	8	
	Unit III	Bipolar Junction transistors	Prof. Siba Prasad Mandal	September, 2024	4	
	Unit IV	Field Effect transistors	Dr. Madhumita Nath	September, 2024	4	
	Unit V	Amplifiers	Prof. Siba Prasad Mandal	November, 2024	4	
	Unit VI	Coupled Amplifier	Dr. Madhumita Nath	November, 2024	5	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Name of the Paper	Practical	Topic	Name of Teacher	To be completed during the month & year	No of Practical Classes
Analog Systems and Applications (BSCHPHSC303)	1	To study V-I characteristics of PN junction diode, and Light emitting diode.	Prof. Siba Prasad Mandal	September, 2024	5
	2	To study the V-I characteristics of a Zener diode and its use as voltage regulator.	Dr. Madhumita Nath		5
	3	To study the frequency response of voltage gain of a RC-coupled transistor amplifier.	Prof. Siba Prasad Mandal		5
	4	To design a digital to analog converter (DAC) of given specifications.	Dr. Madhumita Nath		5
	5	To design an inverting amplifier using Op-amp (741,351) for dc voltage of given gain	Prof. Siba Prasad Mandal	November, 2024	5
	6	To design inverting amplifier using Op-amp (741,351) and study its frequency response	Dr. Madhumita Nath		5
	7	To design non-inverting amplifier using Op-amp (741,351) & study its frequency response	Prof. Siba Prasad Mandal		5
	8	To add two dc voltages using Op-amp in inverting and non-inverting mode	Dr. Madhumita Nath		5
	9	To investigate the use of an op-amp as an Integrator and as a differentiator.	Prof. Siba Prasad Mandal		5

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Full Marks: 100 [Theoretical (ESE – 40 & CA – 10); Practical (ESE – 20 & CA – 30)] [L-T-P: 4-0-4]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Fundamentals of Thermal and Statistical Physics (BSCHPHSGE301)	Unit I	Laws of Thermodynamics	Prof. Siba Prasad Mandal	August, 2024	8	CA1 – September,2024
	Unit II	Kinetic Theory of Gases	Dr. Madhumita Nath	August, 2024	6	
	Unit III	Theory of Radiation	Prof. Siba Prasad Mandal	October, 2024	5	CA2- November 2024
	Unit IV	Statistical Mechanics	Dr. Madhumita Nath	October, 2024	8	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Name of the Paper	Practical	Topic	Name of Teacher	To be completed during the month and year	No of Practical Classes
Fundamentals of Thermal and Statistical Physics (BSCHPHSGE301)	1	To determine mechanical equivalent of Heat, J, by Callender and Barne‟s constant flow method.	Prof. Siba Prasad Mandal	September, 2024	6
	2	To determine the coefficient of thermal conductivity of Cu by Searle‟s Apparatus.	Dr. Madhumita Nath		6
	3	To determine the coefficient of thermal conductivity of a bad conductor by Lee and Charlton‟s disc method.	Prof. Siba Prasad Mandal		6
	4	To determine the temperature coefficient of resistance/boiling point by platinum resistance thermometer.	Dr. Madhumita Nath	November, 2024	6
	5	To study the variation of thermo-emf of a thermocouple with difference of temperature of its two Junctions.	Prof. Siba Prasad Mandal		6
	6	To determine temperature co-efficient of resistance of metal/semiconductor by meter-bridge.	Dr. Madhumita Nath		4
	7	Determination of coefficient of linear expansion by optical lever/travelling microscope.	Prof. Siba Prasad Mandal		

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Skill Enhancement Course [L-T-P: 0-0-8]

Full Marks: 50 (Practical CA – 30 & Practical ESE – 20)

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Practical Classes	Continuous Internal Assessment in the Month of
Electrical Circuit Network Skills (BSCHPHSSEC 301)	Unit I	Basic Electricity Principles	Dr. Madhumita Nath	August, 2024	6	CA1 – September,2024 CA2- November 2024
	Unit II	Understanding Electrical Circuits	Prof. Siba Prasad Mandal	August, 2024	8	
	Unit III	Electrical Drawing and Symbols	Dr. Madhumita Nath	September, 2024	4	
	Unit IV	Generators and Transformers	Prof. Siba Prasad Mandal	September, 2024	5	
	Unit V	Electric Motors	Dr. Madhumita Nath	October, 2024	5	
	Unit VI	Solid-State Devices	Prof. Siba Prasad Mandal	October, 2024	4	
	Unit VII	Electrical Protection	Dr. Madhumita Nath	November, 2024	4	
	Unit VIII	Electrical Wiring	Prof. Siba Prasad Mandal	November, 2024	4	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Semester -V

Full Marks: 100 [Theoretical (ESE – 40 & CA – 10); Practical (ESE – 20 & CA – 30)] [L-T-P: 4-0-4]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Quantum Mechanics (BSCHPHSC501)	Unit I	Old quantum theory	Dr. Madhumita Nath	August, 2024	4	CA1 – September,2024 CA2- November 2024
	Unit II	Basic quantum mechanics	Prof. Siba Prasad Mandal	August, 2024	6	
	Unit III	Basic postulates of quantum mechanics	Prof. Siba Prasad Mandal	September, 2024	4	
	Unit IV	Time dependent and time independent Schrodinger equation	Dr. Madhumita Nath	September, 2024	7	
	Unit V	Simple applications of Quantum Mechanics	Prof. Siba Prasad Mandal	October, 2024	7	
	Unit VI	Schrodinger equation in spherical polar coordinates	Dr. Madhumita Nath	October, 2024	4	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Full Marks: 50 [Theoretical (ESE – 40 & CA – 10)] [L-T-P: 5-1-0]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Thermal Physics II BSCHPHSSC502	Unit I	First Law of Thermodynamics	Dr. Madhumita Nath	August, 2024	5	CA1 – September,2024
	Unit II	Second Law of Thermodynamics	Prof. Siba Prasad Mandal	August, 2024	5	
	Unit III	Thermodynamic Functions	Dr. Madhumita Nath	September, 2024	4	
	Unit IV	Heat Engines	Prof. Siba Prasad Mandal	September, 2024	6	
	Unit V	Refrigerators	Dr. Madhumita Nath	September, 2024	4	CA2- November 2024
	Unit VI	Thermodynamics of Reversible cells	Prof. Siba Prasad Mandal	September, 2024	4	
	Unit VII	Change of State	Dr. Madhumita Nath	October, 2024	5	
	Unit VIII	Multicomponent Systems	Prof. Siba Prasad Mandal	October, 2024	4	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Discipline Specific Elective (DSE I & II) [L-T-P: 5-1-0]

Full Marks: 50 [Theoretical (ESE – 40 & CA – 10)]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Nuclear and Particle Physics (BSCHPHSDSE501)	Unit I	General Properties of Nuclei	Dr. Madhumita Nath	August, 2024	4	CA1 – September,2024
	Unit II	Nuclear Models	Prof. Siba Prasad Mandal	August, 2024	6	
	Unit III	Radioactivity decay	Prof. Siba Prasad Mandal	September, 2024	4	
	Unit IV	Nuclear Reactions	Dr. Madhumita Nath	September, 2024	5	
	Unit V	Particle Accelerators	Prof. Siba Prasad Mandal	October, 2024	5	CA2- November 2024
	Unit VI	Particle physics	Dr. Madhumita Nath	October, 2024	7	

Full Marks: 50 [Theoretical (ESE – 40 & CA – 10)]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Communication Electronics (BSCHPHSDSE502)	Unit I	Electronic communication	Dr. Madhumita Nath	August, 2024	10	CA1 – September,2024
	Unit II	Analog Modulation	Prof. Siba Prasad Mandal	August, 2024	11	
	Unit III	Analog Pulse Modulation	Prof. Siba Prasad Mandal & Dr. Madhumita Nath	September, 2024	10	CA2- November 2024

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Full Marks: 50 [Theoretical (ESE – 40 & CA – 10)]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Atomic Physics & Spectroscopy (BSCHPHSDSE503)	Unit I	Atomic Spectrum	Dr. Madhumita Nath	August, 2024	5	CA1 – September,2024 CA2- November 2024
	Unit II	Vector atom model	Prof. Siba Prasad Mandal	August, 2024	6	
	Unit III	Many electron mode	Prof. Siba Prasad Mandal	September, 2024	8	
	Unit IV	Molecular spectroscopy	Dr. Madhumita Nath	September, 2024	6	
	Unit V	Laser Spectroscopy	Prof. Siba Prasad Mandal	October, 2024	6	

Department of Physics

Academic Calendar and Academic Plan for AY 2024-25 (ODD SEMESTER)

Full Marks: 50 [Theoretical (ESE – 40 & CA – 10)]

Name of the Paper	Unit Number	Topic	Name of Teacher	To be completed during the month and year	No. of Theoretical Classes	Continuous Internal Assessment in the Month
Astronomy & Astrophysics (BSCHPHSDSE504)	Unit I	Astronomical Scales	Dr. Madhumita Nath	August, 2024	4	CA1 – September,2024 CA2- November 2024
	Unit II	Astronomical techniques	Prof. Siba Prasad Mandal	August, 2024	6	
	Unit III	The sun	Dr. Madhumita Nath	September, 2024	4	
	Unit IV	The milky way	Prof. Siba Prasad Mandal	September, 2024	5	
	Unit V	Galaxies	Dr. Madhumita Nath	October, 2024	5	
	Unit VI	Large scale structure & expanding universe	Prof. Siba Prasad Mandal	October, 2024	7	