ST. XAVIER'S COLLEGE (AUTONOMOUS), AHMEDABAD-9
FACULTY OF SCIENCE

DEPARTMENT OF PHYSICS & ELECTRONICS

SEMESTER – I

SYLLABUS

OF

BSc PHYSICS (HONOURS)

BASED ON UNDERGRADUATE CURRICULUM FRAMEWORK (NEP – 2020)

(Effective from Academic Year 2025)

Curriculum Framework for Semester – I

Course	Title	Content		Credit
DSC-3 (Theory)	PHMC111C Electromagnetics and Electronics	U1	Electrostatics	4
		U2	Magnetostatics	
		U3	Electric and Electronic Circuits	
		U4	Bipolar Junction Transistor	
DSC-4 (Laboratory)	PHMC111L Physics and Experiential Lab-II	14 Physics Experiments		4
		Experiential Lab: 1 hands on experiment.		
Minor-1 (Theory + Lab)	PHMN111C Basic Physics-II	U1	Electrostatics	2
		U2	Bipolar Junction Transistor	
		U3 U4	14 experiments as mentioned in syllabus	2
Minor-1 (Theory + Lab)	ELMN111C Basic Electronics-II	U1	Network theorem and Filters	2
		U2	General Amplifier Characteristics	
		U3 U4	14 experiments as mentioned in syllabus	2
SEC	PHSE111C Basic Skill in Electronics: Soldering, Testing Fabrication	U1		2
		U2	Laboratory Component	
MDC	MDC206C Astronomy for Beginners	U1	Intr. to Astronomy and Observations in Astronomy	4
		U2	Principles and Tools for Observations in Astronomy	
		U3	Celestial Objects and Their Nature	
		U4	Field Trip/Project/Stargazing	
AEC	Ability Enhancement Course	(To be offered by the concerned subject Department)		2
VAC	Value Added Course	(To be chosen from a basket of courses)		2
Total Credits				**22**

* DSC: Discipline Specific Core

St. Xavier's College (Autonomous), Ahmedabad

Syllabus of Semester–I to be implemented from the Academic Year **2025-26.**

DEPARTMENT OF PHYSICS & ELECTRONICS

SEC Course: Basic skills in Electronics: Soldering, Testing and fabrication

Course Code & Title	Credit Distribution of The Course				Eligibility Criteria	Prerequisite(s) of the Course (if any)
	Cr	Lecture hrs	Laboratory hrs	Activity/Case study analysis		
PHSE111C: Basic skills in Electronics: Soldering, Testing and fabrication	2	15x1	15x2		10 + 2 from a recognized board	Science Stream Math-Group

Learning Objectives:

LO1	Demonstrate the ability to build, test, and troubleshoot electronic circuits using appropriate components and instruments.
LO2	Fabricate a functional electronic product by assembling tested circuits with variable controls, connectors, and protective components like fuses.

Course Outcomes:

CO1	Identify and understand the function of basic electronic components such as capacitors, inductors, diodes, transistors, and transformers.	resistors,
CO2	Operate and utilize electronic measuring instruments like ammeters, voltmeters, CROs, and signal generators in circuit analysis and testing.	multimeters,

Unit 1: Course work

Credit of Course: 1 Cr **Lecture 12 Hrs** **Tutorial 3Hrs**

[A] Components: Resistors, Capacitors, Inductors, Transformer, PN Junction diode, Zener diode, Transistor
[B] Instruments: Ammeter (AC/DC), Voltmeter (AC/DC), Multimeter, Audio frequency oscillator(AFO), Function generator, Cathode Ray Tube (CRO).

Unit 2: Laboratory Component

Credit of Course: 1 Cr **Laboratory 30Hrs**

1	Identification and testing of various active and passive components
2	CRO: Frequency, Periodic time and phase
3	Use of Function generator, AFO, Multimeter and power supply
4	To design and construct Half wave rectifier circuit using PN junction diode
5	To design and construct Full wave rectifier circuit using PN juction diode
6	To design and construct RL Low pass filter
7	To design and construct RC High pass filter
8	Transistor I/P and O/P characteristics