

**ST. XAVIER'S COLLEGE (AUTONOMOUS)**

**AHMEDABAD**

**Botany Syllabus  
for  
Four-Year Undergraduate Programme  
as per  
National Education Policy (NEP-2020)  
(Semester I)**



**(EFFECTIVE FROM JUNE 2023)**

**ST. XAVIER'S COLLEGE (Autonomous), AHMEDABAD**  
**BOTANY**  
**Theory syllabus**

**PROGRAMME SPECIFIC OUTCOMES**

**PSO1: Knowledge:** Understanding the nature and basic concepts of all the plant groups, their morphonology, anatomy, taxonomy, physiology, biochemistry, genetics, components at the molecular level, the relationship between structure and function, plant diversity, and ecology.

**PSO2: Laboratory skills:** Students learn to carry out practical work in the field and in the laboratory related to interpreting plant morphology and anatomy, plant identification and collection, vegetation analysis techniques, physiochemical analyses of plant materials, analysis of data using appropriate statistical methods, documentation of field visits, visits to gardens and nurseries.

**PSO3: Environmental concern:** Students become aware of natural resources and understand the impact of plant diversity in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development with respect to assessment, conservation and utilization of floral diversity.

**PSO4: Employability/future prospects:** Students develop critical thinking, scientific attitudes, problem-solving skills, presentation skills, teamwork capacities, and an aptitude that is highly valuable to employers in the sector of academia, research and industry and which will facilitate them for taking up and shaping successful careers in Botany.

**PSO5: Scientific communication:** Effective written and oral scientific communication skills, especially the ability to transmit the fundamental concepts of the subject in a clear and concise manner.

**PSO6: Life-long learning:** Students are prepared for lifelong learning by drawing attention to the vast world of knowledge of plants and by enhancing their ability to engage in independent learning by introducing them to the methodology of systematic academic inquiry.

**St. Xavier's College (Autonomous), Ahmedabad**

**Syllabus of Semester – I of the following department under Faculty of Science based on Under Graduate Curriculum Framework - 2023 to be implemented from the Academic Year 2023-24.**

**FACULTY OF SCIENCE**

**DEPARTMENT OF BOTANY**

Course	Title	Content	Hours/ week	Credit
SEC	Botany Lab operations and Safety measures (BOSE111L)	U-1: Botany Lab operations U-2: Botany Safety measures	2 hrs	2

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Syllabus of Semester – I of the following departments under Faculty of Science based on Under Graduate Curriculum Framework - 2023 to be implemented from the Academic Year 2023-24.

### FACULTY OF SCIENCE

### DEPARTMENT OF BOTANY

#### BSc. (Hons.) Botany

#### **Skill Enhancement Course: Botany Lab Operations and Safety Measures**

#### **CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE**

Course Title & Code	Credit Distribution of The Course			Eligibility Criteria	Prerequisite(s) of the Course (if any)
	Lecture	Tutorial	Practical / Practice		
Botany Lab Operations and Safety measures (BO-1650)	2	0	0	10 + 2 from a recognized board in any stream	Basic knowledge of Biology

#### **LEARNING OBJECTIVES (LO)**

LO-1	To understand the basic biological laboratory practices and operations.
LO-2	To gain knowledge about important safety measures in all aspects of Botany laboratory operation and safety measures.

#### **Course OUTCOMES (CO)**

On Completion of this course, the student will be able to

CO-1	Develop skills as required for developing a functional Botany Laboratory.
CO-2	Explain various Botany safety measures and discuss the minimum requirement to maintain the Biosafety level in the laboratory.

**Unit 1: Botany Lab operations****(15 L)**

1. Introduction to Botany Laboratory: Overview of a Botany laboratory, Model layout of Biology Laboratory.
2. Infrastructure needed for Botany Laboratory, Good laboratory practice, and Good documentation practice.
3. Minimum requirement of, equipment/items for a Botany laboratory.
4. Maintenance of discipline and cleanliness in the laboratory.

**Unit 2: Botany Safety Measures****(15 L)**

1. General safety rules; General Lab behaviour and work procedure for students.
2. Lab Standard Operations Procedure (SOP): Personal safety, Lab environment, standard disposal practices, chemical hazardous material disposal, general garbage disposal.
3. Handling: chemicals and plant materials.
4. Biosafety level (BSL); dress code and Personal Protective Equipment (PPE).
5. Safety symbols, fire safety, and Emergency Response Preparedness.

**Suggestive Reading:**

- Biology Laboratory Manual, Darrell S. Vedopich, McGraw Hill, 11<sup>th</sup> Edition, 2016
- Laboratory biosafety manual by Biosecurity and Health Security Protection EPP, Viet Nam, World Health Organization, 4<sup>th</sup> Edition, 2020
- Plant Micro technique and Microscopy by A.L. Kothari, R. K. Sharma, and A. K. Sharma
- Biological Science by Scott Freeman, Kim Quillin, Lizabeth Allison, and Michael Black
- Essentials of Laboratory Safety by Fredrick M. Latterell
- Biosafety in the laboratory: Prudent practices for the handling and disposal of infectious materials By the National Research Council
- Laboratory safety for biotechnology and laboratory classes” By William M. Sanders.

**Suggested Online Links/Readings:**

<https://swayam.gov.in>

[www.ncert.in](http://www.ncert.in)

<https://books.google.co.in>

**Pedagogy:**

1. Lecture method with teaching aids.
2. Audio-Visual Teaching mode with Projector Method.
3. Dialogue and context-based class.
4. Assignments, Learning seminars, Class Tests etc.
5. Open Online Sources and Tutorials

**MODE OF EVALUATION:**

ASSESSMENT	MARKS
INTERNAL	
Attendance	05
Assignments	05
Continuous Internal Assessment I and II	15
TOTAL	25 marks
EXTERNAL	
End Semester Exam	25 marks

Students will prepare and present (in pairs) a Submission related to the topic of Assignment on allotted topics. These submissions will be presented in the form of PPT/ Activity/Handwritten notes etc. Points for evaluation: Presentation (20%) + Content (20%) + Explanation (20%) + Creativity (20%) + Overall impression (20%).