Hindi Vidya Prachar Samiti's

Ramniranjan Jhunjhunwala College

of Arts, Science & Commerce

(Empowered Autonomous College)

Affiliated to

UNIVERSITY OF MUMBAI

Syllabus for the T. Y. B.Sc. (under NEP)

Program: B.Sc. BOTANY

Program Code: RJSUBOT

Course Code: RJVSCBOT361

Semester VI

(Revised in alignment with the NEP2020 facilitating the inter-and multidisciplinary learning and multiple entry and exit of the students)
Level 5.5

(CBCS)

Revised syllabus to be implemented form 2025-2026

Preamble

The National Education Policy 2020 aims at imparting skill-based learning and caters to the multiple entry and exit facility for the students thus empowering them to acquire knowledge at their pace in the three-year UG program, the student has two exit options. Students also have the option of choosing the Honors program of four years study in a given discipline and later converting it to five-year integrated PG degree program. As an undergraduate student, he/she learns the core subject (Major), subject complementing the core subject (Minor), a course from other discipline (OEC or GEC) Vocational and Skill Enhancement course from the Major (VSEC). The remaining verticals under NEP 2020 are IKS (Indian Knowledge System), AEC (Ability Enhancement Course), VEC (Value Education Course) and with progressive three years of UG, student also completes at different levels OJT (On Job Training), FP (Field Projects), CEP (Community Engagement Program) , RP (Research Project) which helps him/her in understanding their roots, application of the knowledge for the benefit of self and the society. Vertical CC (Co-curricular activities and activities related to yoga and human well-being) helps in preparing youth with good character and interpersonal relationships.

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Credit Structure for B Sc Semester VI as per NEP 2020 Implemented from the academic year 2025-2026
Major Subject: Botany

Semester VI
Level 5.5 Major Botany

Courses	Credits	Total Credits	Course Titles
Major Theory I **Plant Physiology and Biochemistry**	**4**	**12**	**RJDSCBOT361**
Major Theory II **Genetics and Biostatistics**	**4**		**RJDSCBOT362**
Major Practical I	**2**		**RJDSCBOTP361**
Major Practical II	**2**		**RJDSCBOTP362**
Discipline specific Elective (DSE) I Theory **Economic Botany**	**2**	**4**	**RJDSEBOT361**
Discipline specific Elective (DSE) I Practical **Economic Botany**	**2**		**RJDSEBOTP361**
Discipline Specific Elective Course (DSE) II **Microbiology and Plant Pathology**	**2**	**4**	**RJDSEBOT362**
Discipline Specific Elective Course (DSE) II **Microbiology and Plant Pathology**	**2**		**RJDSEBOTP362**
Vocational Skill Course (VSC) **Plant Anatomy**	**2**	**2**	**RJVSCBOTP361**
On Job Training (OJT)	**4**	**4**	**RJOJTBOT361**
Total Credits	**22**	**22**	

***As per University Grid**

T.Y.B.Sc. Semester VI Botany Syllabus

Course Code	Unit	Topic Headings	Credits	Duration
RJDSCBOT361	**Paper Title: Plant Physiology and Biochemistry**			**(60 hours)**
	I	Enzymes	4	
	II	Nitrogen metabolism		
	III	Vegetative growth		
	IV	Photomorphogenesis		

Course Code	Unit	Topic Headings	Credits	Duration
RJDSCBOT362	**Paper Title: Genetics and Biostatistics**			**(60 Hours)**
	I	Genetic mapping in Eukaryotes	4	
	II	Gene mutations		
	III	Extra chromosomal Inheritance		
	IV	Biostatistics		

Course Code	Unit	Topic Headings	Credits	Duration
RJDSCBOTP361	**Practical Title: Plant Physiology and Biochemistry**			**(60 Hours)**
			2	

Course Code	Unit	Topic Headings	Credits	Duration
RJDSCBOTP362	**Practical Title: Genetics and Biostatistics**			**(60 hours)**
			2	

Elective Course 1

Course Code	Unit	Topic Headings	Credits	Duration
RJDSEBOT361	**Paper Title: Economic Botany**			**(30 hours)**
	I	Fibers and Fiber yielding plants	2	
	II	Minor Cereals and Small grains		
	III	Essential Oil		
	IV	Spices and other flavoring materials		

Course Code	Unit	Topic Headings	Credits	Duration
RJDSEBOTP361	**Practical Title: Economic Botany**			**(60 hours)**
	I		2	

Elective Course 2

Course Code	Unit	Topic Headings	Credits	Duration
RJDSEBOT362	**Paper Title : Microbiology and Plant Pathology**			**(30 hours)**
	I	Types of microbes, Culturing of microbes	2	
	II	Role of microbes in fermentation		
	III	Plant pathology terms, plant diseases caused by fungi, bacteria and virus (one example each)		
	IV	Prevention and control measures for plant diseases		

Course Code	Unit	Topic Headings	Credits	Duration
RJDSEBOTP362	**Practical Title: Microbiology and Plant Pathology**			**(60 hours)**
			2	

Course Code	Unit	Topic Headings	Credits	Duration
RJVSCBOTP361	**Practical Title: Plant Anatomy**			**(60 hours)**
	I		2	

Course Code	Unit	Topic Headings	Credits	Duration
RJOJTBOT361	**Paper Title: On Job Training (OJT)**			**(120 hours)**
			4	

COURSE OUTCOMES (COs) B. Sc. BOTANY

SEMESTER	:	VI MAJOR SUBJECT VSC
TITLE OF THE SUBJECT/COURSE	:	PLANT ANATOMY (PRACTICAL)
COURSE CODE	:	**RJVSCPBOT361**
CREDITS	:	02
DURATION	:	60 HOURS

LEARNING OBJECTIVES	
1	Students will learn skills like use of microscopy
2	Preparation of stains, staining techniques
3	Identify the plant material with the help of anatomical characters

COURSE OUTCOME NUMBER	On completing the course, the student will be able to:	PSO Addressed	BLOOMS LEVEL
CO1	Identify the plant material using anatomical characters	1	BT Level III, IV Apply draw conclusions
CO2	Understand the mechanism which enables a plant to endure various physical stress	1, 3	BT level III, IV and V
CO3	Develop skills for preparation of permanent slides	1,3	BT level III, IV and V

B.Sc. BOTANY SEMESTER V Botany Syllabus

LIST OF PRACTICALS

Course Code	Practical	Credits
RJVSCBOTP361	**PLANT ANATOMY**	**2**
❖ The Primary Body : Dicot and Monocot root and stem ❖ The Primary Body: Leaf dorsiventral and isobilateral leaves ❖ Mechanical tissue system: Inflexibility, Inextensibility, Incompressibility, Shearing stresses ❖ Normal secondary growth : Dicot root and stem ❖ Anomalous secondary growth in stem: *Bignonia, Salvadora, Dracaena* ❖ Anomalous secondary growth in roots: Storage roots of *Beta vulgaris, Raphanus sativus* ❖ Differential staining: Haematoxylin and Safranin, understand the technique of permanent slide preparation.		

Scheme of Examinations

1. Continuous Internal evaluation of 20 marks.
2. One External (Semester End Practical Examination) of 30 marks. Duration: 1 hour.
3. Minimum marks for passing the Semester End Exam are 40%.
4. Students must appear for the Semester End Examination to be able to complete total credits for a given Semester.
5. For any KT examinations, there shall be Examination on Demand and students must register for the same.
6. A candidate will be allowed to appear for the practical examinations if he/she submits a certified journal of T.Y.B.Sc. VSC Botany or a certificate from the Head of the Department/Institute to the effect that the candidate has completed the practical course of T.Y.B.Sc. VSC Botany as per the minimum requirements.
7. In case of loss of journal, a candidate must produce a certificate from the Head of the Department/Institute that the practical for the academic year were completed by the student. However, such a candidate will be allowed to appear for the practical examination, but the marks allotted for the journal (if any) will not be granted.
8. HOD's decision, in consultation with the Principal, shall remain final and abiding to all.

Evaluation and Assessment
(Based on the centralized guidelines given by EC under NEP 2020)

Evaluation of Practical

1. Total marks – 50 marks
2. Continuous Internal evaluation during Practical's includes field trips -20 marks
3. Semester End Practical examination: 30 marks

Mapping of the course to Local/ Regional/National/International relevance

The diversity existing in the Plant kingdom is unparalleled ranging from single cell to the tallest tree living on this planet. Plants represent the unique organism which fulfills the energy needs of all other organisms. With their unique metabolic capacity they can carry out biosynthesis of complex biomolecules at ambient temperature and pressure without polluting the surroundings, in fact help in obviating climate change. All courses contribute towards SDG 4 i.e. Quality Education

Class	**Course Name**	**Course Code**	**Local relevance**	**Regional relevance**	**National relevance**	**International relevance**
T.Y.B.Sc Botany Major	Plant Anatomy	**RJVSCBOTP361**	✔	✔	✔	✔

Mapping of the course to Employability/Entrepreneurship/Skill development
The courses in Botany have been designed to impart one or more skills to make students employable.

Class	**Course Name**	**Course Code**	**Topic focusing on Employability/ Entrepreneurship/skill development**	**Employability/ Entrepreneurship/Skill development**	**Specific activity**
T.Y.B.Sc Botany Major	Plant Anatomy	RJVSCBOTP361	All topics are relevant to correct plant identification using anatomical characters employability in authentication of plant parts of the plant based drugs Ayurvedic companies. Research lab.	Plant identification based on anatomical characters, slide preparation for academic purposes.	Sectioning and staining of plant material.

Integration of Cross cutting Issues

Class	Course Name	Course Code	Cross Cutting Issues
T.Y.B.Sc Botany Major VSC	Plant Anatomy	RJVSCBOTP361	Ethics, Environment and Sustainability UNSDG 4 NEP 2020 Interdisciplinary