SECOND YEAR BACHELOR OF SCIENCE MINOR BOTANY REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: PLANT DIVERSITY AND CELL BIOLOGY SEMESTER-III, W.E.F. 2024-2025

RECOMMENDED BY THE BOARD OF STUDIES IN BOTANY
AND
APPROVED BY THE ACADEMIC COUNCIL

Devrukh Shikshan Prasarak Mandal's
Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh.
Tal.Sangmeshwar, Dist. Ratnagiri-415804, Maharashtra, India

Academic Council Item No: 03

Name of the Implementing Institute	:	Nya. Tatyasaheb Athalye Arts, Ved. S. R. Sapre Commerce, and Vid. Dadasaheb Pitre Science College (Autonomous), Devrukh. Tal. Sangmeshwar, Dist. Ratnagiri-415804,
Name of the Parent University	:	University of Mumbai
Name of the Programme	:	Bachelor of Science
Name of the Department	:	Botany
Name of the Class	:	Second Year
Semester	:	Third
No. of Credits	:	02
Title of the Course	:	Plant Diversity and Cell Biology
Course Code	:	S201BTT
Name of the Vertical in adherence to NEP 2020	:	Minor
Eligibility for Admission	:	FY B.Sc. Pass seeking Admission to SY B.Sc. in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	Formative and Summative
Level	:	UG
Pattern of Marks Distribution for TE and CIA	:	60:40
Status	:	NEP-CBCS
To be implemented from Academic Year	:	2024-2025
Ordinances /Regulations (if any)		

Syllabus for Second Year of Bachelor of Science in Botany

(With effect from the academic year 2024-2025)

SEMESTER-III **Paper No.– Botany Paper – I**

Course Title: Plant Diversity and Cell Biology **No. of Credits - 02**

Type of Vertical: Minor **COURSE CODE: S201BTT**

Learning Outcomes Based on BLOOM's Taxonomy:

After completing the course, the learner will be able to…

Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Remember	Recall the systematic position, occurrence, uses of *Sargassum, Anthoceros, Selaginella.* Remember the ultrastructure and functions of Cell organelles, Types of Cell division, Nucleic acid, Protein synthesis, chromosomal aberrations, Nuclear and extranuclear genetics
CLO-02	Understand	Explain the External structure of algae, bryophytes, pteridophyte, role of cell organelles, cell division, nucleic acids, proteins and chromosomal aberrations
CLO-03	Apply	Execute the Internal structure in algae, bryophytes and pteridophytes. Implement the knowledge to differentiate various cell organelles, cell divisions, nucleic acids, proteins and structural changes in chromosomes
CLO-04	Analyse	Differentiate between vegetative, asexual and sexual reproduction stages of algae, bryophytes and pteridophytes with characters and internal structure. Distinguish between cell division, nucleic acids, proteins and chromosomal aberrations
CLO-05	Evaluate	Justify alternation of generations in life cycle of *Sargassum, Anthoceros, Selaginella.* Validate the types of cell, cell division, types of nucleic acids, effect of chromosomal aberrations

Syllabus for Second Year of Bachelor of Science in Botany

(With effect from the academic year 2024-2025)

SEMESTER-III **Paper No.– Botany Paper – I**

Course Title: Plant Diversity and Cell Biology **No. of Credits - 02**

Type of Vertical: Minor **COURSE CODE: S201BTT**

COURSE CONTENT			
Module No.	**Content**	**Credits**	**No. of Lectures**
I Algae, Bryophyte, Pteridophyte	**1.** General Characters of Division Phaeophyta **(VS 16.1 to 16.10)** **2.** Structure, life cycle and systematic position of *Sargassum* **(PT 53.1 to 53.7)** **3.** General Account of Class Anthocerotae and Musci **(GK 29.1, 30.1)** 4. Structure, life cycle and systematic position of of *Anthoceros* **(GK 29.2 to 29.8)** **5.** Salient features of Pteridophyta **(PM 21.1 to 21.3)** 6. Structure, life cycle and systematic position of *Selaginella* **(VSA 6.1 to 6.8)**	02	15
II Cell and Molecular Biology: Mitochondrion, Ribosomes, Cytogenetics	1. Ultra Structure and functions of the following cell organelles: Mitochondrion, Ribosomes (**RB 4.5.1, CBP 24, 29, BDS 2.4.2, 2.4.10**) 2. Cell Division - Mitosis and Meiosis, Differences between Mitosis and Meiosis (**CBP 33 – 35, BDS 4.1 - 4.7, 5.1 -5.10**) 3. Nucleic Acids: Types, structure and functions of DNA and RNA (**CBP 5-6, BDS 25.1 – 25.7**) 4. Protein Synthesis (**CBP 30, BDS 33.1 – 33.7**) 5. Variation in Chromosome structure Deletions, Duplications, Inversions and Translocations. (**GSS – 18, BDS – 7.1 – 7.7**) 6. Sex determination, Sex linked, sex influenced and sex-limited traits (**BDS – 20.1 – 20.9**)		15
	Total	02	30

Required Previous Knowledge

Basic Knowledge of fundamentals of Biology, Plant Classification, plant external and internal structure, basic cell and molecular biology and cytogenetics in plants is necessary before starting to learn the course

Access to the Course

The course is available for all the students admitted for Bachelor of Science as minor. The students seeking admission in other disciplines may select the course as a minor considering the terms and conditions laid down by the University of Mumbai, the Government of Maharashtra, and the college, from time to time.

Forms of Assessment

The assessment of the course will be of Diagnostic, Formative and Summative type. At the beginning of the course diagnostic assessment will be carried out. The formative assessment will be used for the Continuous Internal Evaluation whereas the summative assessment will be conducted at the end of the term. The weightage for formative and summative assessment will be 60:40. The pattern will be followed as decided and passed in Academic Council of the college.

Grading Scale

The grading scale used is O to F. Grade O is the highest passing grade on the grading scale, and grade F is a fail. The Board of Examinations of the college reserves the right to change the grading scale.

Reference Books

VS. Botany for Degree Students Algae by B.R. Vashishta, A.K. Sinha, V.P. Singh, S. Chand Publ.
PT. A Textbook of Botany Vol. I by S.N. Pandey, P.S. Trivedi, Vikas Publ.
GK. College Botany Volume II by H.C. Gangulee, and A. K. Kar by New Central Book Agency
PM. A Textbook of Botany Vol II by S.N. Pandey, S.P. Misra, P.S. Trivedi, Vikas Publ.
VSA. Botany for Degree Students Pteridophyta by P.C Vashishta, A.K. Sinha, Anil Kumar, S. Chand Publ.
RB. Raven Biology 12th Edition https://bio.libretexts.org /Bookshelves /Introductory and General Biology
CBP. Molecular Cell Biology by C. B. Powar, Himalaya Publishing House
GSS. Principles of Genetics Eighth Edition by E. J. Gardner, M. J. Simmons and D. P. Snustad, John Wiley India.
BDS. Fundamentals of Genetics by B. D. Singh, Kalyani Publishers.

1. Cryptogamic Botany Volume I and II by G M Smith, McGraw Hill.
2. Cryptogamic Botany Vol. I & II (2nd Edition) by Gilbert, M. S., Tata McGraw Hill Publishing Co., Ltd New Delhi.
3. Introductory Phycology by Kumar, H. D. 1988, Affiliated East-West Press Ltd., New
4. York.
5. Biochemistry and Molecular Biology of Plants. by Buchanan. B.B. Grussem. W. and Jones. R.L. 2000. American Society of Plant Physiologists, Maryland, USA.
6. Genetics by Russel. Wesley Longman inc publishers. (5th edition)
7. Plant Physiology by Taiz and Zeiger Sinauer Associates inc. publishers
8. Cell Biology by De Robertis
9. A Text Book of Systematic Botany by Sutaria R N

10. A text book of Plant Ecology by Ambasht R.S.
11. Fundamentals of Cytology by L. W. Sharp.
12. Prescott, L.M., Harley J.P., Klein D. A. (2005). Microbiology, McGraw Hill, India. 6th edition.