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

COURSE TITLE: BOTANY PRACTICAL 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	:	Botany Practical
Course Code	:	S202BTP
Name of the Vertical in adherence to NEP 2020	:	Minor
Eligibility for Admission	:	FY BSc Pass seeking Admission to SY BSc. Programme in adherence to Rules and Regulations of the University of Mumbai and Government of Maharashtra
Passing Marks	:	40%
Mode of Assessment	:	SSE
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 – II**

Course Title: Botany Practical **No. of Credits - 02**

Type of Vertical: Minor **COURSE CODE: S202BTP**

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 of *Sargassum*, *Anthoceros*, *Selaginella*, Remember the ultrastructure from Photomicrographs, garden plants
CLO-02	Understand	Explain the structure of algae, bryophytes, Pteridophyte, role of cell organelles, cell division, nucleic acids, proteins and chromosomal aberrations with labelled diagrams.
CLO-03	Apply	Execute laboratory skill for preparation of various slides of *Sargassum*, *Anthoceros*, *Selaginella*, mitosis, meiosis
CLO-04	Analyse	Estimation DNA, RNA from plant material, Analyze inheritance pattern, cytological consequences of chromosomal aberrations
CLO-05	Evaluate	Determine the sequence of amino acids in the protein molecule, Separate amino acids by circular paper chromatography

Syllabus for Second Year of Bachelor of Science in Botany

(With effect from the academic year 2024-2025)

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

Course Title: Botany Practical **No. of Credits - 02**

Type of Vertical: Minor **COURSE CODE: S202BTP**

Course Content			
Module	**Practicals**	**Cr**	**L**
		02	**60**
I	1. Study of stages in the life cycle of *Sargassum* from fresh/ preserved material and permanent slides. 2. Study of stages in the life cycle of *Anthoceros* from fresh/ preserved material and permanent slides 3. Study of stages in the life cycle of *Funaria* from fresh/ preserved material and permanent slides. 4. Study of stages in the life cycle of *Selaginella* from fresh/ preserved material and permanent slides. 5. Study of form genera *Rhynia* with the help of permanent slides/photomicrographs 6. Study of Lichens (crustose, foliose and fruiticose) 7. Preparation of garden plans – formal and informal gardens 8. Study of three examples of plants for each of the garden locations 9. Chromatography: Separation of amino acids by circular paper chromatography		
II	1. Study of the ultra-structure of cell organelles prescribed for theory from Photomicrographs. 2. Study of mitosis from suitable plant material. 3. Study of meiosis from suitable plant material. 4. Estimation of DNA from plant material (one Std & one Unknown, No Std Graph) 5. Estimation of RNA from plant material (one Std & one Unknown, No Std Graph) 6. Study of inheritance pattern with reference to Plastid Inheritance 7. Study of cytological consequences of chromosomal aberrations (Laggards, Chromosomal Bridge, Ring chromosome, Chromosomal ring) from permanent slides or photomicrographs 8. DNA sequencing by Sanger's method 9. Determining the sequence of amino acids in the protein molecule synthesised from the given m-RNA strand of prokaryotes. 10. Determining the sequence of amino acids in the protein molecule synthesised from the given m-RNA strand of eukaryotes		
	Total	02	60

Required Previous Knowledge

To study module -I the basic knowledge of fundamentals of Biology, branches of Biology, basics of Viruses, Bacteria, Algae, Fungi and Bryophytes is necessary before starting to learn the course

To study module -II the basic knowledge of fundamentals of Biology, branches of Biology, basics of Cell biology, Ecology and Genetics 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 a Major or a 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

Courses having laboratory sessions shall be assessed at the end of each semester. The pattern will be followed as 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

1. College Botany Volume I and II by Gangulee, Das and Dutta. Central Education Enterprises
2. Cryptogamic Botany Volume I and II by G M Smith, McGraw Hill.
3. Text book of Fungi by O.P. Sharma, Tata McGraw
4. Morphology and Evolution of Vascular Plants by Gifford, E. M. and Foster, A. S., W.H. Freeman & Co., New York.
5. Cryptogamic Botany Vol. I & II (2nd Edition) by Gilbert, M. S., Tata McGraw Hill Publishing Co., Ltd New Delhi.
6. Introductory Phycology by Kumar, H. D. 1988, Affiliated East-West Press Ltd., New York.
7. Comparative Morphology of Vascular Plants by Foster, A. S. and Gifford, A.E.M. jr. Vakils, Peffer & Simons Pvt., Ltd.
8. The Morphology of Angiosperms by Sporne, K.R. B.I. Publication, Bombay.
9. Taxonomy of Vascular Plants by Lawrance. G.H.M. 1951. MacMillan, New York.
10. Environmental Science: A Global Concern by Cunningham.W.P. and Saifo S.W. 1997. WCB. McGraw Hill.
11. Biochemistry and Molecular Biology of Plants. by Buchanan. B.B. Grussem. W. and Jones. R.L. 2000. American Society of Plant Physiologists, Maryland, USA.

12. Plant Melabolism (2nd Edition) by Collins. H.A. and Edwards D.H. Lefebvre. D.D. and Layzell. D.B. (eds) 1997. Longman, Essex, England
13. Genetics by Russel. Wesley Longman inc publishers. (5th edition)
14. Plant Physiology by Taiz and Zeiger Sinauer Associates inc. publishers
15. Fundamentals of Ecology by E P Odum and G W Barrett. Thompson Asia Pvt Ltd. Singapore.
16. Cell Biology by De Robertis
17. A Text Book of Systematic Botany by Sutaria R N
18. Taxonoy of Angiosperms by Pandey S N and Mishra S D
19. A text book of Plant Ecology by Ambasht R.S.
20. Fundamentals of Cytology by L. W. Sharp.
21. Taxonomy of Angiosperms by V.N. Naik, Tata McGraw Hill
22. Plant Systematics: An integrated Approach by Gurcharan Singh, Science Publ.
23. Prescott, L.M., Harley J.P., Klein D. A. (2005). Microbiology, McGraw Hill, India. 6th edition.
24. Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.