FIRST YEAR OF BACHELOR OF SCIENCE MAJOR/MINOR BOTANY REVISED SYLLABUS ACCORDING TO CBCS NEP2020

COURSE TITLE: BOTANY PRACTICAL SEMESTER-II
W.E.F. 2023-2024

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: 3 dated 08/07/2023

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	:	First Year
Semester	:	Second
No. of Credits	:	02
Title of the Course	:	Botany Practical
Course Code	:	S105BTP
Name of the Vertical in adherence to NEP 2020	:	Major and Minor
Eligibility for Admission	:	12^{th} Science Pass seeking Admission to Degree 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	:	2023-2024
Ordinances /Regulations (if any)		

Syllabus for First Year of Bachelor of Science in Botany

(With effect from the academic year 2023-2024)

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

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

Type of Vertical: Major and Minor **COURSE CODE: S105BTP**

Learning Outcomes Based on BLOOM's Taxonomy:

After completion of the course, the learner will be able to…

Course Learning Outcome No.	Blooms Taxonomy	Course Learning Outcome
CLO-01	Remember	Recall the occurrence, structure, reproduction of pteridophytes, gymnosperm and angiosperm, Definition of anatomy, physiology and medicinal botany, types of tissues, photochemical reactions, metabolites.
CLO-02	Understand	Explain the identification and classification of pteridophytes, gymnosperm and angiosperm on basis of general characters and principles of taxonomy, types of tissues, photochemical reactions, metabolites.
CLO-03	Apply	Demonstrate the Botanical Understanding to local area problems related to diversity and life cycle of pteridophytes, gymnosperm and angiosperm, local medicinal plant diversity, photochemical pathways and uses of medicinal plants.
CLO-04	Analyse	Differentiate the changing patterns of reproduction in pteridophytes, gymnosperm and angiosperm, changing behavior of cell, tissue, photochemical pathways.
CLO-05	Evaluate	Justify the role of pteridophytes, gymnosperm and angiosperm in nature, role of anatomy, photochemical pathways and metabolites.

Syllabus for First Year of Bachelor of Science in Botany

(With effect from the academic year 2023-2024)

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

Course Title: Botany Practical **No. of Credits - 04**

Type of Vertical: Major and Minor **COURSE CODE: S105BTP**

Course Content			
Sr. No.	**Practicals**	**Cr**	**L**
		02	**60**
I	1. Study of stages in the life cycle of *Nephrolepis*: Mounting of ramentum, hydathode, T.S. of rachis 2. T.S. of pinna of *Nephrolepis* passing through sorus 3. Economic importance of pteridophytes: *Azolla*, *Nephrolepis, Selaginella* 4. To study stages in the life cycle of *Cycas, Cycas*: T.S of leaflet (pinna) 5. Megasporophyll, microsporophyll, coralloid root, microspore, L.S. of ovule of *Cycas* – all specimens to be shown 6. Economic importance of gymnosperms: *Pinus* (turpentine, wood, seeds) 7. Plant morphology (Root, Stem, Leaf): as per theory 8. Types of inflorescence and flower: as per theory 9. Salient features and economic importance of Malvaceae 10. Salient features and economic importance of Amaryllidaceae	01	30
II	1. Primary structure of dicot and monocot root 2. Primary structure of dicot and monocot stem 3. Study of dicot and monocot stomata 4. Epidermal outgrowths: with the help of mountings Unicellular: Cotton/Radish Multicellular: *Lantana*/Sunflower Glandular: *Drosera* and Stinging: *Urtica* – only identification with the help of permanent slides. Peltate: *Thespesia*, Stellate: *Erythrina*/*Sida acuta*/*Solanum*/*Helicteres*, T-shaped: *Avicennia* 5. Separation of chlorophyll pigments by strip paper chromatography 6. Separation of amino acids by paper chromatography 7. Change in colour because of change in pH: Anthocyanin: black grapes/Purple cabbage 8. Test for tannins: tea powder/catechu 9. Identification of plants or plant parts for grandma's pouch as per theory	01	30
	Total	02	60

Required Previous Knowledge

To study the Module- I, basic knowledge of fundamentals of Biology, branches of Biology, basics of pteridophytes, gymnosperm and angiosperm is necessary before starting to learn the course

To study the Module- II, Basic Knowledge of fundamentals of Biology, branches of Biology, basics of anatomy, physiology and medicinal botany 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.