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

COURSE TITLE: PLANT DIVERSITY AND FUNCTIONS I SEMESTER-I, 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	:	First
No. of Credits	:	02
Title of the Course	:	Plant Diversity and Functions I
Course Code	:	S101BTT
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	:	Formative and Summative
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-I **Paper No.– Botany Paper – I**

Course Title: Plant Diversity and Functions I **No. of Credits - 02**

Type of Vertical: Major and Minor **COURSE CODE: S101BTT**

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 *Nostoc*, *Spirogyra*, *Rhizopus*, and *Riccia*, Remember the Definition of cell biology, ecology, ecosystem, multiple alleles, Types of Cells, ecosystems, phenotypes and genotypes
CLO-02	Understand	Explain the structure of algae, fungi and bryophytes, Understand the type of cells with their differences, ultrastructure and function of Cell wall, plasma membrane, endoplasmic reticulum and chloroplast, ecological concepts, gene interaction and Mendelian Genetics
CLO-03	Apply	Execute the vegetative, asexual and sexual reproduction stages in algae, fungi and bryophytes, Apply the Botanical Understanding to local ecological diversity and pattern of cell divergence and its expression.
CLO-04	Analyse	Differentiate between types of bacteria, viruses, algae, fungi, bryophytes with characters and internal structure, Analyse the changing behavior of cell and its expression in divers ecological conditions.
CLO-05	Evaluate	Justify alternation of generations in life cycle of *Rhizopus* and *Riccia*, Evaluate the role of cell biology, ecology and genetics in the evolution of living organism.

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(With effect from the academic year 2023-2024)

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

Course Title: Plant Diversity and Functions I **No. of Credits - 02**

Type of Vertical: Major and Minor **COURSE CODE: S101BTT**

COURSE CONTENT			
Module No.	**Content**	**Credits**	**No. of Lectures**
I Algae, Fungi and Bryophyta	1. Classification of Plants 2. Algae: General characters, Classification of algae (G.M. Smith) 3. *Nostoc* and *Spirogyra*: Occurrence, structure, systematic position reproduction and life cycle 4. Fungi: General characters, Classification of fungi (G.M. Smith) 5. *Rhizopus*: Occurrence, structure, systematic position reproduction and life cycle 6. Bryophyta: General characters Classification of bryophyte (G.M. Smith) 7. *Riccia*: Occurrence, structure, systematic position reproduction and life cycle	02	15
Unit II	1. Ecology: Introduction, Food chains and Food webs; 2. Ecological pyramids, Energy flow in an ecosystem, 3. Ecosystem: Introduction, types of ecosystems: aquatic and terrestrial 4. Cell as a unit of structure and function, 5. Characteristics of prokaryotic and eukaryotic cells 6. General structure of plant cell: cell wall, plasma membrane 7. Cell organelles: Ultra structure and functions: endoplasmic reticulum and chloroplast 8. Genetics: Introduction, Principles of inheritance, 9. Mendelian Genetics- monohybrid, dihybrid; test cross; back cross ratios 10. Incomplete dominance and codominance, 11. Multiple alleles, Gene interactions		15
	Total	02	30

Required Previous Knowledge

Basic Knowledge of fundamentals of Biology, branches of Biology, basics of Algae, Fungi and Bryophytes 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

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

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. Cryptogamic Botany Vol. I & II (2nd Edition) by Gilbert, M. S., Tata McGraw Hill Publishing Co., Ltd New Delhi.
5. Introductory Phycology by Kumar, H. D. 1988, Affiliated East-West Press Ltd., New York.
6. Biochemistry and Molecular Biology of Plants. by Buchanan. B.B. Grussem. W. and Jones. R.L. 2000. American Society of Plant Physiologists, Maryland, USA.
7. Plant Melabolism (2nd Edition) by Collins. H.A. and Edwards D.H. Lefebvre. D.D. and Layzell. D.B. (eds) 1997. Longman, Essex, England
8. Genetics by Russel. Wesley Longman inc publishers. (5th edition)
9. Plant Physiology by Taiz and Zeiger Sinauer Associates inc. publishers
10. Fundamentals of Ecology by E P Odum and G W Barrett. Thompson Asia Pvt Ltd. Singapore.
11. Cell Biology by De Robertis
12. A text book of Plant Ecology by Ambasht R.S.
13. Fundamentals of Cytology by L. W. Sharp.
14. Prescott, L.M., Harley J.P., Klein D. A. (2005). Microbiology, McGraw Hill, India. 6th edition.
15. Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.