

# **SHIVAJI UNIVERSITY, KOLHAPUR.**



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CHOICE BASED CREDIT SYSTEM

Syllabus For

**B.Sc. Part - I**

**Botany**

**SEMESTER I AND II**

**(Syllabus to be implemented from June, 2018 onwards.)**

**B.Sc.Part I : Subject: Botany**

## SEMESTER –I

Botany Paper I: **DSC- 13 A:** BIODIVERSITY OF MICROBES, ALGAE AND FUNGI**CREDITS: 2,** LECTURE PERIODS: 2.5 PER WEEK- LECTURE HOURS: 2 PER WEEK, **MARKS: 50**

UNIT	SUB-UNIT	TOPICS	LECTURE PERIOD
<b>1.</b>	<b>MICROBES</b>		
<b>1.</b>	<b>1.a</b>	<b>VIRUSES</b>	
	<b>VIRUSES</b>	Discovery, general characters and structure of viruses Types of viruses- DNA virus- T-phage, RNA virus –TMV, Economic importance of viruses.	<b>06</b>
<b>1.</b>	<b>1. b</b>	<b>BACTERIA</b>	
	<b>BACTERIA</b>	Discovery, General characters, Cell structure, Types Modes of reproduction – Vegetative, Asexual, Sexual- Conjugation Economic Importance.	<b>06</b>
<b>2.</b>	<b>ALGAE &amp; FUNGI</b>		
	<b>2.a</b>	<b>ALGAE</b>	
	<b>ALGAE</b>	General characters, Classification- as per G.M.Smith up to Classes. General characters of each class with suitable example. Economic importance of algae. Morphology and Life Cycles (excluding developmental stages) of following types- a. Cyanophyceae: <b><i>Nostoc</i></b> b. Chlorophyceae: <b><i>Spirogyra</i></b>	<b>09</b>
<b>2.</b>	<b>2.b</b>	<b>FUNGI</b>	
	<b>FUNGI</b>	General Characters, Classification as per Ainsworth – up to classes.	<b>09</b>
		General characters of each division with suitable examples	
		Economic Importance.	
		<i>Morphology and life cycle (excluding developmental stages) of following types.</i> a. Zygomycotina: <b><i>Mucor</i></b> b. Ascomycotina: <b><i>Penicillium</i></b>	
		Total	<b>30</b>

SHIVAJI UNIVERSITY, KOLHAPUR  
Choice Based Credit System (CBCS)

Syllabus with effect from 2018

B.Sc.Part I : Subject: Botany

SEMESTER –I

Botany Paper II: **DSC- 14 A: BIODIVERSITY OF ARCHEGONIATE-** Bryophytes,Pteridophytes, Gymnosperms

**CREDITS: 2, LECTURE PERIODS: 2.5 PER WEEK- LECTURE HOURS: 2 PER WEEK, MARKS: 50**

UNIT	SUB-UNIT	TOPICS	LECTURE PERIOD
<b>1.</b>		<b>BRYOPHYTES</b>	
<b>1.</b>	<b>1.a</b>	General characters, Adaptation to land habit, Classification –as per G.M.Smith up to order, Alternation of Generation. Economic Importance. Morphology, anatomy and life cycle (excluding developmental stages) of following type. Hepaticopsida: <i>Riccia</i> Bryopsida- <i>Funaria</i>	<b>08</b>
		<b>PTERIDOPHYTES</b>	
<b>1.</b>	<b>1.b</b>	General characters, Classification as per G. M. Smith up to order. Morphology and anatomy, Life Cycles (Excluding developmental stages) of following types. a. Lycopsida- <i>Selaginella</i> b. Pteropsida - <i>Pteris</i> Heterospory and seed habitat	<b>11</b>
<b>2.</b>		<b>GYMNOSPERMS</b>	
	<b>2.a</b>	General characters, Classification as per Sporne-1965, up to Classes. General characters of class with suitable example. Economic importance of gymnosperms.	<b>07</b>
<b>2.</b>	<b>2.b</b>	Morphology and anatomy, Life Cycle (Excluding developmental stages) of following type Gnetopsida- <i>Gnetum</i>	<b>04</b>
		Total	<b>30</b>

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B.Sc.Part I : Subject: Botany

SEMESTER –II

Botany Paper III: DSC- 13 B: PLANT ECOLOGY

**CREDITS: 2, LECTURE PERIODS: 2.5 PER WEEK- LECTURE HOURS: 2 PER WEEK, MARKS: 50**

UNIT	SUB-UNIT	TOPICS	LECTURE PERIOD
1.	1.a	<b>ECOLOGICAL FACTORS AND ADAPTATIONS</b>	
1.	1.a	<b>INTRODUCTION, DEFINITION AND SCOPE OF ECOLOGY</b>	<b>01</b>
1.		<b>ECOLOGICAL FACTORS:</b> <b>Edaphic factors:</b> Soil- Origin and formation, Composition, soil profile. Water- States of water in environment. <b>Climatic factors:</b> Light and Temperature as ecological factors, Optimum and limiting factors. <b>Ecological Adaptations:</b> Ecological adaptations in, Hydrophytes, Xerophytes, Epiphytes and parasites.	<b>07</b>
1.		<b>PLANT COMMUNITIES AND SUCCESSION</b>	
	1.b.	<b>Plant communities:</b> Introduction, general Characters, forms and structure, Raunkier's life forms. <b>Plant Succession :</b> Characters and Process and types – Hydrosere, Xerosere.	<b>07</b>
2.		<b>Ecosystem and Phyto-geography</b>	
	2.a	<b>Ecosystem:</b> Introduction, Composition- Abiotic and Biotic components, Types of ecosystems – Aquatic and Terrestrial (one example of each type). <b>Food chain and web.</b> <b>Ecological pyramids-</b> Number, Biomass and Energy with suitable example.	<b>10</b>
	2.b	<b>Biogeochemical cycles-</b> Introduction, Phosphorus and Nitrogen cycle. Phytogeographical regions as per Chatterji and Mani	<b>05</b>
		<b>Total</b>	<b>30</b>

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**Choice Based Credit System (CBCS)**

Syllabus with effect from 2017

**B.Sc.Part I : Subject: Botany**

**SEMESTER –II**

Botany Paper IV: **DSC- 14 B: PLANT TAXONOMY**

**CREDITS: 2, LECTURE PERIODS: 2.5 PER WEEK- LECTURE HOURS: 2 PER WEEK, MARKS: 50**

UNIT	SUB-UNIT	TOPICS	LECTURE PERIOD
<b>1.</b>	<b>INTRODUCTORY TAXONOMY, ICBN, BOTANICAL GARDENS</b>		
<b>1.</b>	<b>1.a</b>	Introduction, Importance of Taxonomy. Functions of taxonomy: Identification, Nomenclature, Binomial Nomenclature, Classification. Salient features of International Code of Botanical Nomenclature (ICBN).	<b>08</b>
<b>1.</b>	<b>1.b</b>	Herbarium- Introduction, Role and significance. Botanical Gardens: Introduction, Role and Significance. Study of Sir J.C.Bose Botanical Garden, Calcutta. Lead Botanical Garden, Shivaji University, Kolhapur.	<b>07</b>
<b>2.</b>	<b>ANGIOSPERMS AND SYSTEMS OF CLASSIFICATION</b>		
	<b>2.a</b>	<b>Classification of angiosperms.</b>	
		Salient features of Angiosperms. Types of classification: Natural, Artificial, Phylogenetic. Bentham and Hooker's System of classification.	<b>06</b>
<b>2.</b>	<b>2.b. Study of Angiosperm families:</b>		
	<b>2.b</b>	Morphological, floral and distinguishing characters of following families with examples of plants of economic importance. 1. Caesalpiniaceae. 2. Solanaceae. 3. Nyctaginaceae. 4. Liliaceae.	<b>09</b>
<b>Total</b>			<b>30</b>

SHIVAJI UNIVERSITY, KOLHAPUR  
B.Sc. I. Botany  
Practical Based on Paper I and Paper II

Practicals-

1. Study of Forms of bacteria
2. Study of *Nostoc*
3. Study of *Spirogyra*
4. Study of *Mucor*
5. Study of *Penicillium*
6. Study of *Riccia*
7. Study of *Funaria*
8. Study of *Selaginella*
9. Study of *Pteris*
10. Study of *Gnetum*
11. Study of Meteorological Instruments
12. Study of Water Holding Capacity of different soils
13. Determination of soil and water pH by Universal Indicator/ pH paper/ pH meter
14. Study of morphological and anatomical adaptations in hydrophytes- *Hydrilla*, *Eichhornia*.
15. Study of morphological and anatomical adaptations in Xerophytes- *Aloe*, *Nerium*.
16. Study of morphological and anatomical adaptations in Epiphytes (Orchid) and Parasites, *Cuscuta*.
17. Study of Ecological pyramids based on the field data / given data.
18. Study of Phytogeographical regions of India using standard Maps
19. Study of flowering twig morphology – Vegetative characters
20. Study of flowering twig morphology - Floral -/reproductive characters
21. Study of primitive and advanced characters in flowers with suitable specimen.
- 22-25 . Study of Vegetative and Floral characters of following plant families,  
Family Caesalpiaceae  
Family Solanaceae  
Family Nyctaginaceae  
family Liliaceae.

**SHIVAJI UNIVERSITY, KOLHAPUR**

**B.Sc. PART I: BOTANY**

**CBCS SYLLABUS**

**SEMESTER I: PAPER I: DSC. 13 A.: BIODIVERSITY OF MICROBES, ALGAE AND FUNGI**

**SEMESTER I: PAPER II: DSC. 14 A.: BIODIVERSITY OF ARCHAGONIATE-  
BRYOPHYTES, PTERIDOPHYTES AND GYMNOSPERMS.**

**SEMESTER II: PAPER III: DSC.13 B.: PLANT ECOLOGY**

**SEMESTER II: PAPER IV.DSC.14 B.: PLANT TAXONOMY**