VIDHYADEEP UNIVERSITY

B.Sc. BOTANY

Teaching & Evaluation Scheme

Semester – III

Course name: Bachelor of Science (Botany)		**Semester III**							
Grade System:									
Subject			Teaching Scheme		Examination Scheme		Passing Scheme		Total Marks
Subject Code	Paper No.	Paper Title	Hours/ week	Credit	Theory		Passing Head		
			Theory	Theory	Internal	External	Internal	External	
1102301	BOT 301	Botany Paper- I	2	2	20	50	9	17	70
1102302	BOT 302	Botany Paper- II	2	2	20	50	9	17	70
1102303	BOT 303	Botany paper- III	2	2	20	50	9	17	70
1102304	BOT 304	Practical	4	2	20	40	9	14	60

Unit : 1	**Plant Physiology part 1** **1.water potential and Root Absorption** ➢ Method, Path and Types of Root Absorption ➢ Factors affecting root absorption **2. Ascent of sap** ➢ Introduction ➢ Ascent of sap by xylem ➢ Root pressure theory ➢ Dixon's theory of cohesion **3. Transpiration** ➢ Introduction, Types and Structure of Stomata; Mechanismof Stomatal Transpiration. ➢ Significance of transpiration ➢ Factor affecting transpiration
Unit :2	**Plant physiology part 2** **1.Respiration** ➢ Introduction ➢ types of respiration ➢ mechanism of respiration I. Glycolysis II. Kreb's cycle ➢ Oxidative Phosphorylation ➢ ATP synthesis in aerobic respiration ➢ Factor affecting respiration
Unit: 3	➢ **Anatomy part : 1** ➢ **Primary tissue structure in root** I. Monocot II. Dicot ➢ **Primary tissue structure in stem** I. Monocot stem II. Dicot stem ➢ **Primarytissue structure in leaf** I . Monocot leafand II. Dicot leaf
Unit :4	**Anatomy part : 2** ➢ Definition and study of normal & anomalous secondary growth seen in thefollowing plants. 1) Bignonia. 2) Nyctanthus. 3) Boerhaavia. 4) Dracaena.

Paper code: 1102302 Botany Paper: 302 Plant Physiology, Plant Embryology and Plant Genetics

Unit: 1	**Plant Ecology 1** (A) Ecosystem ➢ Concept of Ecosystem ➢ Types & Components of Ecosystem ➢ Food chain , Food webs and Ecological Pyramids ➢ Energy flow in ecosystem
Unit: 2	**Plant Ecology 2** (A) Plant communities: ➢ Halophytes ➢ Epiphytes ➢ Lithophytes (B)EcologicalFactors:ClimaticandEdaphicfactor(c) Soil erosion and conservation: ▪ General introduction, types of soil erosion, factorsResponsible for soil erosion, control of soil erosion.
Unit: 3	**Embryology1** ➢ Microsporangium and Male gametophyte ▪ Structure of Microsporangium, Microsporogenesis andMale Gametophyte. ▪ ➢ Megasporangium and Female gametophyte ▪ Structure of Megasporangium, MegasporogenesisandFemale Gametophyte. ➢ Fertilization
Unit : 4	**Genetics** ➢ Heredity ▪ Mendel's experiments ▪ Mendel's laws of inheritance ▪ Linkage and Crossing over ➢ Genetic material and it's Structure ▪ Chemical Composition of gene ▪ Nucleic Acids , Structure of DNA,Types of RNA

Paper code: 1102303 Botany Paper: 303 Gymnosperm plants, Angiosperm plantStructure and family

Unit :1	**Gymnosperm** ➢ Classification with reason, External Morphology, InternalStructure ,Reproduction, Male gametophyte, Female gametophyte, Fertilization,Germination of seed of following: (1) Pinus (2) Gnetum
Unit :2	**Plant structure 1** ➢ Weak stem plants ➢ Bracts ➢ Special types of inflorescence ➢ Fruits ▪ Types of fruits
Unit :3	**Plant Structure 2** ➢ **Pollination** Pollination , Types of Pollination; Pollination in Salvia, Ficus, Orchids and Vallisneria ➢ Defensive devices of Plants
Unit :4	**Angiosperm** ➢ Plant taxonomy: Principle of Plant taxonomyClassification with reasons (according to Bentham and Hooker system),general and distinguishing characters and examples (scientific name) ofimportant plants of the following families. 1. Brassicaceae 2. Papilionaceae 3. Caesalpiniaceae 4. Mimosaceae 5. Meliaceae 6. Cucurbitaceae 7. Lamiaceae 8. Canaaceae

Paper code: **1102304** **Botany Paper: 304**

Title of paper:

- Every candidate shall complete laboratory course in accordance with theregulations issued from time to time by Academic council on therecommendation of the Board of Studies**.**
- Every candidate shall record observation directly in the laboratory journal.Every journal shall be signed periodically. At the end of the semestercandidate shall produce certified journal during the practical examination.

Practical:1	**To study physiological experiments for demonstration**· 1. To demonstrate anaerobic respiration. 2. Release of CO2 during aerobic respiration (conical flask method). 3. Todemonstratethatenergyisreleasedintheformofheatduring Respiration. 4. To demonstrate that phenomenon of transpiration. (Bell-jarmethod) 5. Demonstration of the stomata transpiration by four leavesMethod. 6. To demonstrate that water moves though the xylem.
Practical:2	**To study principle and working method of ecologicalinstruments.** 1. Thermograph 2. Hygrograph Anemometer 3. Ralinguage 4. Sling Psychromotor 5. Soil thermometer
Practical:3	**To study ecological peculiarities of Orchid Root and Leaf.**
Practical:4	**To study ecological peculiarities of Avicenna Root and Leaf.**
Practical:5	**To study primary tissue structure in stem of Sunflower and Maize.**
Practical:6	**To study anomalous secondary growth in Bignonia.**
Practical:7	**To study anomalous secondary growth in Nyctanthus.**

Practical:8	**To study anomalous secondary growth in Boerhaavia.**
Practical:9	**To study permanent slides of Anatomy.** 1. Sunflower root T.S 2. Maize root T.S 3. Sunflower stem T.S 4. Maize stem T.S 5. Sunflower leaf T.S 6. Maize leaf T.S 7. Bignonia old stem T.S 8. Boerhaavia old stem T.S 9. Nyctanthus old stem T.S
Practical:11	**(A) To study external morphology and anatomy of Pinus needle(Leaf).** **{** preparation of slides from the fresh/ preserved material by theStudents**}** **(B) To study permanent slides of Pinus.** 1. Pinus young stem T.S. 2. Pinus needle T.S. 3. Pinut male cone T.S. 4. Pinus male cone L.S. 5. Pinus female cone T.S. 6. Pinus female cone L.S.
Practical:12	**(A) To study external morphology and anatomy ofGnetum.** **{**Preparation of slides from the fresh/ preserved material(twing, male cone and female cones) by the students}. **(B) To study Permanent slide of Gnetum** 1. Gnetum young stem T.S. 2. Gnetum old stem T.S. 3. Gnetum Leaf T.S. 5. Gnetum male cone T.S. Gnetum male cone T.S. 6. Gnetum female cone T.S. 7. Gnetum female cone L.S. 8.Gnetum ovule L.S.
Practical:13	**To study weak stem plants.** 1. Creepers: Cynodon, Centella 2. Trailers: Boerhaaviadiffusa 3. Twiners: Ipomeacarica(Ipomeapalmeta) 4. Dolichos lablab 5. Tendrill climber: Passion Flower, Visit sp., Pisumsp.,Clemitis,Tropeolum,Gloriosasuperb,Smilax,Antigonon 6. Root Climbers: Pothos 7. Scramblers and hook climbers: Rose,Cane,Artobotrys,Zizyphus 8. Adhesive climber : ficusrepens

Practical:14	**To study Bracts.** 1. Foliaceous- Adhatoda 2. Petaliod- Bougainvallia 3. Spathy- Colocasia 4. Involucaral-Halianthus/ Tridex 5. Scaly – Halianthus /Tridex(disc florets) 6. Cupule – Hibiscus 7. Glumes – Maize , grass
Practical:15	**To study special types of inflorescence.** 1. Hypanthodium: Ficus 2. Cyathium: Euphorbia 3. Coenanthium: Doerstania 4. Verticillaster: ocimum
Practical:16	**To study defensive devices of plants.** 1. Thorns- Carissa, Bougainvillea 2. Spines- Zizyphus, Accacia, Opuntia 3. Prickles- Rose, Smilax 4. Stinging hair- Urtica 5. Glandularhairs – Jetropha 6. Sticky latex – Euphorbia , calotropis
Practical 17	**To study morphological characters, floral dissection,** **T.S.of ovary and floral formula , floral diagram of followingfamilies** 1.Brassicaceae 2. Papilionaceae 3. Caesalpiniaceae 4. Mimosaceae 5. Meliaceae 6. Cucurbitaceae 7. Lamiaeceae 8. Cannaceae

VIDHYADEEP UNIVERSITY

B.Sc. BOTANY

Teaching & Evaluation Scheme

Semester – IV

Course name: Bachelor of Science (Botany)			**Semester IV**						
Grade System:									
Subject			Teaching Scheme		Examination Scheme		Passing Scheme		Total Marks
Subject code	Paper No.	Paper Title	Hours/ week	Credit	Theory		Passing Head		
			Theory	Theory	Internal	External	Internal	External	
1102401	BOT 401	Botany Paper - IV	2	2	20	50	9	17	70
1102402	BOT 402	Botany Paper -V	2	2	20	50	9	17	70
1102403	BOT 403	Botany paper-VI	2	2	20	50	9	17	70
1102404	BOTP 404	Practical's	4	2	20	40	9	14	60

Paper code: 1102401Botany Paper: 401LowerCryptogams- Phytoplankton, Algae and fungi

Unit :1	**PHYTOPLANKTON AND ALGAE** - General characters, structure and importance of phytoplankton - Algae : Occurrence of algae - general characters of algae - Thallus structure of algae - Economic importance of algae - Outline of algal classification given by G.M.smith
Unit :2	**Algae:life history, classification, occurrence,& cell structureandreproduction of following algal genera :** 1. Oscillatoria 2. Oodogonium 3. Ectocarpus 4. Batrachospermum
Unit :3	**Fungi :** - occurrence, - General characters , - Vegetative Structure, - Economic Importance of Fungi - Outline of fungal classification given by C.J. ALEXOPOULOS**.**
Unit :4	**Fungi : life history ,classification Occurrence, Vegetative structureand reproduction of following fungal genera:** 1. Pythium 2. Aspergillus 3. Peziza **4.** Puccinia

Paper code: 1102402 Botany Paper: 402 Higher Cryptogams- Bryophytes and Pteridophytes

Unit :1	**Bryophytes** ➢ General characters ➢ Classification ➢ General account of Hepaticopsida, Anthocerotopsida and Bryopsida ➢ Amphibian adaptation of Bryophytes ➢ Economic importance of Bryophytes ➢ Ecological aspects of Bryophytes
Unit :2	**Life history of following Bryophytes** ➢ Classification and life history of following types. 1. Riccia 2. Anthoceros
Unit :3	**Pteridophytes** □ Habit and Habitate □ General characters □ Classification □ General account of Lycopsida, Sphenopsida,Pteropsida
Unit : 4	**Life history of following Pteridophytes** ➢ Classification and life history of following types. 1. Equisetum 2. Marsellia 3. Sellaginella

Paper code: 1102403Botany Paper: 403 **Plant geography, economic botany, seed plants andplant pathology**

Unit :1	**Plant geography** ➢ Minor forest product of gujarat ➢ Cultivation of the following crops in relation to their origin, Distribution, climate, soil, propagation method of cultivation anduses. 1. Wheat2.ladies finger 3.chilly 4. Rose
Unit : 2	**Economic botany** **1. Scientific name, family, parts, uses and medicinal usesof the following plants.** 1. Tylophpraindica(Damvel) 2. Hemidesmusindicus (Annatmool) 3. Achyranthesaespera (Aghedo) 4. Mucunapruriens(Kavach) 5. Aloe barbedense (Kuvarpathu) 6. Terminalia belearica(Behda) 7. Embelicaofficinalis(Ambla) 8. Centellaasiatica (Bhrami) 9. Helicteresisora (Mardasingh) 10. Santalumalbum(Chandan) **2.** Rubber and its products: Chemical properties, tapping , grading, packing, marketing and uses
Unit : 3	**Seed plants** **3.Classificationwithreasons(accordingtoBenthamandHookersystem), general and distinguishing characters and examples (Scientificname) of important plants of followingfamilies.** 1. Anonaceae 2. Rosaceae 3. Combretaceae 4. Myrtaceae 5. Asteraceae 6. Loranthaceae 7. Liliaceae 8. Arecaceae
Unit : 4	**Plant pathology** **Pathogen (scientific name) and symptoms of following diseases** 1. Late blight of potato 2. Tikka disease of ground nut 3. white rust of Crucifer 4. Red stripe of Sugarcane 5. Soft rot of apple 6. Tobacco Mosaic virus (TMV)

Paper code: 1102404 **Botany Paper: 404** **Botany Practical**

- Every candidate shall complete laboratory course in accordance with theregulations issued from time to time by Academic Council on therecommendation of the Board of Studies.
- Every candidate shall record observation directly in the laboratoryjournal.Every journal shall be signed periodically. At the end of thesemester candidate shall produce certified journal during the practicalexamination.

Practical:1	**To study Thallus structure and hormogonia of algae Oscillatoriya**. (Permanent slides of Oscillatoria Thallus W.M.)
Practical:2	**To study Thallus structure, oogonium and antheridium of algaeOodogonium.** (Permanent slides of Oodogonium Thallus W.M.; Oogonium, antheridium).
Practical:3	**To study Thallus structure, unilocular and plurilocularsporangiumof algae Ecocarpus.** (PermanentslidesofEctocarpusThallusW.M.;Unilocularsporangium,plurilocular sporangium.
Practical:4	**To study Thallus structure and cystocarp of algaeBatrachospermum.** (Permanent slides of Batrachospermum Thallus structure;cytocarp)
Practical:5	**To study vegetative structure of fungi Pythium**. (Permanent slide of Pythium W.M.)
Practical:6	**To study vegetative structure of fungi Aspergillus.** (Permanent slide of Aspargillus W.M.; Connidia)
Practical:7	**To study structure of peziza**. (Permanent slide of peziza Apothecia V.M.)
Practical:8	**To study the stages on whaet leaf** (Uredospore and Teleuto spore)
Practical:9	**To study external features of gametophytes, anatomy of Thallusand sporophytes of Anthoceros.** (Permanent slides of Anthoceros Thallus T.S., Anthoceros antheridia, Anthoceros archegonia, Anthoceros sporophyte)
Practical:10	**To study external features of gametophytes, anatomy of Thallusand sporophytes of Riccia.** (Permanent slides of Riccia Thallus T.S., Riccia sporophytes).
Practical:11	**To study external morphology, anatomy of internode of aerialstems and come of Equisetum.** (Permanent slides of Equisetum stem T.S., Equisetum cone T.S. and L.S)
Practical:12	**To study external morphology and anatomy of Marsellia plantwith structure of spore producing orgons.** (Permanentslides of Marsellia stem T.S., petiole T.S., Sporocarp T.S. and L.S.)

Practical:13	**To study external morphology of Selaginella and anatomicalcharacters of stem, leaf and strobilus.** (PermanentslidesofRootT.S.,leafT.S.,stemT.S.strobilusL.S.,Microsporangium L.S. and Megasporangium L.S.)
Practical:14	**Tostudy following minor forest products**. 1. Gum (Acacia gum) 2. Bidee wrappers (Diospyrossp.) 3. Fiber (jute) 4. Match box 5. Paper 6. Dye (Bixaorellana)Baj 7. Butea monosperma)
Practical:15	**To study Botanical name, family, origin and distribution offollowing**. 1. Wheat 2. Lady's finger 3. Chilly 4. Rose
Practical:16	**Tostudy scientific name, family, parts used and medicinal uses ofthe following plants.** 1. Tylophoraindica(Damvel) 2. Hemidesmusindicus(Anantmool) 3. Achyranthesaspera(Aghedo) 4. Mucunapruriens(Kavach) 5. Aloe barbedense(kuvarpathu) 6. Terminalia belerica(Behda) 7. Embelicaofficinalis(Ambla) 8. Centellaasiatica(Bhrami) 9. Helicteresisora(Mardasingh) 10. Santalum album (Chandan)
Practical:17	**To study Morphological characters , floral dissection, T.S. of Ovaryand floral formulae of following families (any local plants of thesefamily)** 1. Anonaceae 2. Rosaceae 3. Combretaceae 4. Myrtace 5. Asteraceae 6. Loranthaceae 7. Liliaceae 8. Arecaceae
Practical:18	**To study pathogen (scientific name) and symptoms of followingdiseases.** 1. Lateblight of potato 2. Tikka disease of grount nut 3. White rust of Crucifer 4. Red stripe of Sugarcane 5. Soft rot of apple 6. Tobacco Mosaic Virus (TMV)

REFERENCES

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31. Fungi Bacteria And Viruses By H.Cdube, Vikas Publishing House
32. Fungi Bacteria And Viruses By Lokendrasingh,Rastogi Publications
33. Botany For Degree Student Pteridophyta By P.Cvasishta S Chand And Co. Pvt. Ltd.