

**KRANTIGURU SHYAMJI KRISHNA VERMA KACHCHH UNIVERSITY,
BHUJ.**

Year: 2026-2027



B.Sc. (Honours) BOTANY
(With Research /Without Research)

Semesters: VII and VIII

FACULTY OF SCIENCE

SYLLABUS

**Curriculum as per UGC Guideline
Framed according to National Education Policy (NEP) - 2020
With effect from June – 2027 (and thereafter)**



Programme outcomes (POs)

Transformed curriculum shall develop educated outcome-oriented candidature, to develop into responsible citizen for nation-building and transforming the country towards the future with their knowledge gained in the field of plant science.

Programme specific objectives (PSOs): B.Sc. IV Year Degree Course in Basic Botany

- This course will provide knowledge on various fields of basic Botany.
- The syllabus is prepared to enable students for competitive exams in frontier areas of plant sciences.
- Students will be able to know about habit, habitat, morphology, anatomy, and reproduction of various plant groups.
- Student shall produce competent plant biologists who can employ and implement their gained knowledge in basic and applied aspects that will profoundly influence the prevailing paradigm of agriculture, industry, healthcare, and environment to provide sustainable development.
- Certificate and diploma courses are framed to generate self- entrepreneurship and self-employability, if multi exit option is opted. Lifelong learning is achieved by drawing attention to the vast world of knowledge of plants and their domestication.
- Students will increase the ability of critical thinking, development of scientific attitude, handling of problems and generating solutions, improve practical skills, social interaction, and increase awareness in judicious use of plant resources by recognizing the ethical value system.
- The training provided to the students will make them competent enough for doing jobs in Govt. and private sectors of academia, research, and industry along with graduate preparation for national as well as international competitive examinations, especially UGC-CSIR NET, UPSC Civil Services Examination, IFS, NSC, FCI, BSI, FRI etc.,



Credit Framework and course code for FOURTH YEAR BOTANY Programme (B.Sc.)

Year	Semester	Course Code	Paper Title	Credits	Marks		Total
					CA	UA	
Fourth Year	VII	MJ BOT 701	Phycology, Mycology, Bryophytes	3	35	35	70
		MJ BOT 702-P	Phycology, Mycology, Bryophytes	1	15	15	30
		MJ BOT 703	PTERIDOPHYTES, GYMNOSPERM AND ANGIOSPERM	3	35	35	70
		MJ BOT 704-P	PTERIDOPHYTES, GYMNOSPERM AND ANGIOSPERM	1	15	15	30
		MJ BOT 705	ANATOMY, PLAT PHYSIOLOGY	3	35	35	70
		MJ BOT 706-P	ANATOMY, PLAT PHYSIOLOGY	1	15	15	30
		MN BOT 707	ECONOMIC BOTANY	3	35	35	70
		MN BOT 708-P	ECONOMIC BOTANY	1	15	15	30
		OJT	INTERNSHIP IN MAJOR SPECIFIC COURSE	4	50	50	100
		SEC	PLANT BREEDING& CULTIVATION OF MEDICINAL PLANTS	2	25	25	50
			Total Credits	22			
	VIII	MJ BOT 801	MODERN TOOLS AND TECHNIQUES IN BOTANY	3	35	35	70
		MJ BOT 802-P	MODERN TOOLS AND TECHNIQUES IN BOTANY	1	15	15	30
		MJ BOT 803	ROLE OF BOTANY IN SUSTAINABLE DEVELOPMENT	3	35	35	70
		MJ BOT 804-P	ROLE OF BOTANY IN SUSTAINABLE DEVELOPMENT	1	15	15	30
		MJ BOT 805	ENVIRONMENTAL LAWS AND LEGISLATION	3	35	35	70
		MJ BOT 806-P	ENVIRONMENTAL LAWS AND LEGISLATION	1	15	15	30
		MN BOT 807	PHARMACOLOGY, INDUSTRIAL BOTANY AND BOTANY IN DAILY LIFE	3	35	35	70
		MN BOT 808-P	PHARMACOLOGY, INDUSTRIAL BOTANY AND BOTANY IN DAILY LIFE	1	15	15	30
		OJT	INTERNSHIP IN MAJOR SPECIFIC COURSE	6			150
			Total Credits	22			



The Structure of the Question Paper for the University Exam

KSKV Kachchh University: BHUJ

FIRST YEAR B.Sc.: Semester: 7&8

SUBJECT: BOTANY

Total Marks:35, Duration: 2 hours 30

PATTERN OF QUESTION PAPER FOR SEMESTER-END EXAMS

- The structure for FIRST THREE question is as under: 30 Marks (10 X 3)
- Descriptive type 10 Marks**
 - (1) Two questions of 10 Marks each. Out of which one must be answered, the type of questions is varied, like: Flow chart/ labeled diagram with explanation/ writes in detail etc.
 - (2) Three questions of 05 Marks each out of which two must be answered.
- * **The structure for Fourth question is as under: 5 Marks**

Six questions from all three units out of which ten questions shall be answered. Each of 01 mark makes total 5 Marks.
- The types of questions are varied, like: one line answers / two line answers / definitions / reasoning / drawing small figures/ label the figure / fill in the blanks / multiple choice question/ one-word answer / match the pairs etc.

Question No	Question type	Marks	Remarks
Que-1 Unit-1	Descriptive Questions with Internal Option.	10	Question may be of 10 marks/ 5 + 5 marks
Que-2 Unit-2	Descriptive Questions with Internal Option.	10	Question may be of 10 marks/ 5 + 5 marks
Que-3 Unit-3	Descriptive Questions with Internal Option.	10	Question may be of 10 marks/ 5 + 5 marks
Que-4	Do as directed.	5	Total 6 questions from all units will be ask; students have to attempt any 5

PATTERN OF PRACTICAL FOR SEMESTER-END EXAMS

There will be Four Exercises in each Practical, as under, total of 15 Marks.

Instructions: Strictly follow the instructions given by examiner(s).	
Ex: 1. specimen A. (Do as Directed)	04
Ex: 2. specimen B (Do as Directed)	04
Ex: 3. specimen C. (Do as Directed)	03
Ex: 4. Viva-voice, submission, Record book, journal	04

- The End of Semester Examination will be conducted by the University. The Botanical Excursion is highly essential for to studying vegetation in its natural state. There shall be at least one Botanical Excursion.
- This is compulsory to record laboratory work in the Journal. Certified journal have to produce while appearing at the time of Practical examination.
- For the botanical practical fresh material of plants must be need. In absence of fresh material preserved material or specimen can be used.



DETAILED SYLLABUS OF B.Sc. IV YEAR FOR DEGREE COURSE IN BASIC BOTANY**KSKV Kachchh University, Bhuj - Kachchh**

(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 7**(Course code: MJ BOT- 701)****Course Title:** Phycology, Mycology, Bryophytes**Credit: 3****COURSE OBJECTIVES**

- Objective 1: Understanding Diversity of Lower Plants: Algae, Fungi, and Bryophytes.
 Objective 2: Understanding Structure and Organization
 Objective 3: Understanding Reproduction and Life Cycles
 Objective 4: Study of Representative Genera
 Objective 5: Understanding Classification and Evolution
 Objective 6: Understanding Ecological and Economic Importance
 Objective 7: Understanding Culture Techniques and Applied Aspects
 Objective 8: Developing Scientific Knowledge and Research Skills
 Objective 9: Understanding Role in Ecosystem

COURSE OUTCOMES

- CO 1: Understanding General Characteristics and Classification: Algae; Fungi; Bryophytes
 CO 2: Understanding Thallus Organization and Cell Structure: Algae; Fungi; Bryophytes
 CO 3: Knowledge of Reproduction and Life Cycles: Understand life cycle patterns
 CO 4: Knowledge of Representative Genera
 CO 5: Understanding Harmful and Beneficial Roles
 CO 6: Knowledge of Culture Techniques and Applied Aspects
 CO 7: Understanding Sporophyte Structure and Evolution in Bryophytes
 CO 8: Taxonomic and Evolutionary Understanding
 CO 9: Applied and Ecological Understanding
 CO 10: Scientific and Analytical Skills: Develop ability to identify and describe lower plant groups.

DISCIPLINE SPECIFIC CORE COURSES (MAJOR)

COURSE	SEMESTER	COURSE CODE	COURSE TITLE	THEORY			
				Credits	Lectures	External	Internal
Degree Course	B.Sc.	MJ BOT-701	Phycology, Mycology, Bryophytes	3	45	35 Marks	35 Marks
UNIT	TOPIC						
Unit 1	GENERAL CHARACTERISTICS AND CLASSIFICATION: Definition of Algae, Habit and habitat of Algae. Distribution of algae in different environments; Smith (1955); Modern classification of algae; Range of thallus organization; Cell structure; Reproduction and Life Cycles. (Revision self-study) STRUCTURE, REPRODUCTION AND LIFE HISTORY OF REPRESENTATIVE GENERA (Excluding development): <i>Oscillatoria</i>, <i>Spirogyra</i>, <i>Ectocarpus</i>, <i>Diatom</i> HARMFUL EFFECTS OF ALGAE: Harmful algal blooms (HABs); Water blooms; Red tides; Toxic algae; Water pollution; Eutrophication ALGAL CULTURE AND APPLIED PHYCOLOGY: Scope and importance of algal culture; Culture media (general idea): Isolation of algae; Pure culture and axenic culture; Mass culture technique; Commercial cultivation of algae.						
Unit 2	Definition and General Characteristics (Revision self-study) Habit and Habitat (Terrestrial fungi; Aquatic fungi; Parasitic fungi; Saprophytic fungi; Symbiotic fungi) (Revision self-study) - G.C. Ainsworth classification (1973) (Revision self-study); Modern classification (outline and characteristics)						



	• VEGETATIVE STRUCTURE AND MODIFICATIONS: Structure of fungal thallus; Hyphae; Mycelium: Modifications of mycelium (Rhizoids, Stolons, Haustoria, Appressoria, Sclerotia, Rhizomorphs) • NUTRITION AND REPRODUCTION IN FUNGI (Revision self-study) • LIFE CYCLE AND STRUCTURE OF REPRESENTATIVE FUNGI Study Life History; Structure, Reproduction, economic importance and taxonomic position of Claviceps; Morchella; Polyporus. (Excluding development) • FUNGAL CULTURE TECHNIQUES AND APPLIED MYCOLOGY Culture media (PDA – Potato Dextrose Agar); Isolation techniques; Pure culture techniques; Preservation of fungi.
Unit 3	• GENERAL CHARACTERISTICS AND CLASSIFICATION: Definition; General Characteristics; Habit and Habitat; Classification of Bryophytes (main characters of classes with examples -Revision self-study) • SPOROPHYTE STRUCTURE AND LIFE CYCLE: Life History; Structure & Reproduction (Excluding development) and taxonomic position of following Bryophytes <i>Pellia</i>; <i>Notothyllus</i>; <i>Sphagnum</i>. • Evolution of Sporophyte in Bryophytes. • Evolutionary Significance of Bryophytes.

RECOMMENDED BOOKS

1. Fritsch, F.E. – Structure and Reproduction of Algae
2. Smith, G.M. – Cryptogamic Botany Vol. I
3. Lee, R.E. – Phycology
4. Prescott, G.W. – Algae of the Western Great Lakes
5. Kumar, H.D. – Introductory Phycology
6. Pandey, B.P. – Algae
7. Alexopoulos & Mims – Introductory Mycology
8. B.P. Pandey – Textbook of Botany: Fungi
9. Dubey, H.C. – Introductory Mycology
10. Mehrotra & Aneja – Introductory Mycology
11. Webster & Weber – Introduction to Fungi
12. B.P. Pandey – Bryophyta
13. Vashishta – Bryophyta
14. Puri – Bryophyta
15. Shaw & Goffinet – Bryophyte Biology
16. Practical Botany Volume I by Ashok Bendre & Ashok Kumar: Rastogi Publications
17. Practical Botany: P.C. Vashishta, A.K. Sinha, Anil Kumar
18. Laboratory Manual of Botany by H.D. Kumar
19. Practical Botany Vol I & II **Author:** S.R. Mishra
20. Vashishta Practical Botany



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 7

Course Title: Phycology, Mycology, Bryophytes
Practical/ Lab course (Course code: MJ BOT-702-P)

Credit: 1

PCO 1: Identification of Algae, Fungi, and Bryophytes

PCO 2: Understanding Morphology and Structure

PCO 3: Microscopy Skills

PCO 4: Study of Fungal Structures and Modifications

PCO 5: Culture Techniques and Laboratory Skills

PCO 6: Identification of Harmful and Beneficial Forms

PCO 7: Understanding Life Cycle Stages

PCO 8: Scientific Observation and Documentation Skills like Record observations using proper scientific format.; Draw labelled diagrams of specimens.; Maintain practical record book correctly.

PCO 9: Taxonomic Identification Skills

PCO 10: Development of Laboratory Competency

DISCIPLINE SPECIFIC CORE COURSE(MAJOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MJ BOT-702-P	Phycology, Mycology, Bryophytes	1	30	30 Marks (15+15)
UNIT	TOPIC					
1	Study of Algae –Morphology Identification and Reproductive Structure through class work material or slide of e following genera labelled diagrams: Exercise 1: Study of <i>Oscillatoria</i> Exercise 2: Study of <i>Spirogyra</i> Exercise 3: Study of <i>Ectocarpus</i> Exercise 4: Study of <i>Diatoms</i> Exercise 5: Study of: Water bloom specimens; Harmful algal bloom (HAB) slides; Identification and economic importance Exercise 6: Study of <i>Claviceps</i> Exercise 7: Study of <i>Morchella</i> Exercise 8: Study of <i>Polyporus</i> Exercise 9: Study of Fungal Modifications Observation of: Rhizoids; Haustoria; Sclerotia; Rhizomorphs; (permanent slides or specimens.) Exercise 10: Preparation of Culture Media Preparation of: Potato Dextrose Agar (PDA) Exercise 11: Isolation Techniques (Demonstration) Study of: Pure culture techniques; Preservation methods; Aseptic techniques Exercise 12: Study of <i>Pellia</i> Exercise 13: Study of <i>Notothylus</i> Exercise 14: Study of <i>Sphagnum</i>.					



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SEMESTER 7

B. Sc.: BOTANY INTERNAL PRACTICAL /UNIVERSITY PRACTICAL

Course Code: MJBOT-702-P

Course Title: Phycology, Mycology, Bryophytes

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Identification of Specimens A.	04
Ex: 2. Describe the given specimen under following headings: Systematic position; Structure; Reproduction; Identification characters; Draw labelled diagram. Specimen B	04
Ex: 3. Culture Media / Structure / Exercise Specimen C.	03
Ex: 4. Viva-voice, submission, Record book, journal	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/ Fresh Material/ Herbarium (Given by teacher or as a part of Syllabus) will be mandatory for all the students.



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SEMESTER 7

(Course code: MJ BOT- 703)

Course Title: Pteridophytes, Gymnosperm and Angiosperm

Credit: 3

Course Objectives

Students will be able to:

- Understand diversity of pteridophytes, gymnosperm, angiosperm
- Identify pteridophytesgymnosperm, angiosperm
- Explain reproduction and life cycles
- Understand evolution of vascular plants
- Perform laboratory identification
- Understand Angiosperm structure and reproduction
- Identify plant families
- Understand plant classification
- Explain plant anatomy
- Identify plants in field

DISCIPLINE SPECIFIC CORE COURSES (MAJOR)							
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	THEORY			
				Credits	Lectures	External	Internal
Degree Course	B.Sc.	MJ BOT-703	Pteridophytes, Gymnosperm and Angiosperm	3	45	35 Marks	35 Marks
UNIT	TOPIC						
Unit 1	Introduction And General Characteristics of Pteridophytes; Habit and Habitat; Classification systems Classification by G.M. Smith; Modern classification (outline) Life Cycle and Alteration of Generations. STUDY OF REPRESENTATIVE GENERA: Pteris (Structure; Sori and sporangia; Life cycle); Azolla (structure; reproduction; Life cycle) Economic importance: Ornamental plants; Medicinal uses; food; horticultural plants and ritual items. EVOLUTION AND PHYLOGENY: Origin of pteridophytes; Evolution of vascular tissue; Evolution of seed habit (Selaginella) diversity and distribution of pteridophytes in India. Ecological importance: Soil conservation; Forest ecosystem						
Unit 2	Gymnosperms: Definition and general characteristics of Gymnosperms; Habit and habitat; Distribution of Gymnosperms in India and world: Economic and ecological importance; Origin and evolution of Gymnosperms: Relationship with Pteridophytes; Relationship with Angiosperms; impact of gymnosperms on human society Classification systems: Chamberlain (1934): Modern classification (Major Classes and Orders; Diagnostic characters of each group) Reproduction in Gymnosperms: Vegetative reproduction; Sexual reproduction; Male gametophyte development; Female gametophyte development; Pollination types: Fertilization process: Seed formation STUDY OF REPRESENTATIVE GENERA: <i>Zamia</i>, <i>Welwitschia</i> (structure; reproduction; Life cycle)						

Unit 3 Introduction to Angiosperms; Definition and general characteristics;

Classification of Angiosperms: Artificial classification – Linnaeus; Natural classification – Bentham and Hooker; Phylogenetic classification – Engler and Prantl; Modern classification – APG system (basic concept)

Study of the following families with special reference to their geographical distribution, characters, Bentham and Hooker's system of classification; economic and medicinal importance and common examples for members of the families.

Polypetalae: Menispermaceae; Capparidaceae; Meliaceae; Rosaceae; Moringaceae

Gamopetalae: Cucurbitaceae; Plumbaginaceae; Verbenaceae; Acanthaceae

Monochlamydeae: Amaranthaceae; Moraceae; Santalaceae

Monocotyledones: Hydrocharitaceae; Zingiberaceae; Liliaceae

Taxonomic Tools and Hierarchy: floras, manuals, monographs, catalogues, herbariums, botanical gardens, and keys facilitate plant identification and classification, Modern tools.

Botanical keys: Diagnostic, synoptic and artificial keys-Single access (sequential)- bracketed and indented keys and multi-access keys, edge-punched and body-punched (polyclave) keys, tabular and lateral keys; computerized keys, their merits and demerits.

RECOMMENDED BOOKS

- B.P. Pandey – Pteridophyta
- Vashishta – Pteridophyta
- Rashid – Pteridophyta
- Smith – Cryptogamic Botany
- Gymnosperms – B.P. Pandey
- Gymnosperms – Sporne
- College Botany – B.P. Pandey
- Plant Anatomy – Esau
- Botany for Degree Students – B.R. Vashishta
- Botany for Degree Students – B.R. Vashishta
- Plant Taxonomy – B.P. Pandey
- Angiosperm Taxonomy – G.L. Chopra
- College Botany – B.P. Pandey



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 7

Course Title: Pteridophytes, Gymnosperm and Angiosperm

Practical/ Lab course (Course code: MJ BOT-704-P)

Credit: 1

Course Outcome & Objectives

After the completion of the course the students will be able to:

DISCIPLINE SPECIFIC CORE COURSE(MAJOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MJ BOT-704-P	Pteridophytes, Gymnosperm and Angiosperm	1	30	30 Marks (15+15)
UNIT	TOPIC					
	Pteris: Structure; Sori and sporangia; identification and classification Azolla: Structure; reproductive organ identification and classification Zamia: Structure; reproductive organ identification and classification Welwitschia: Structure; reproduction identification and classification Study of vegetative and floral characters of the families prescribed in the theory - Menispermaceae - Capparidaceae - Meliaceae - Rosaceae - Moringaceae - Cucurbitaceae - Plumbaginaceae - Verbenaceae - Acanthaceae - Amaranthaceae - Moraceae - Santalaceae - Hydrocharitaceae - Zingiberaceae - Liliaceae					

Practical exercises

- Temporary slide preparation
- Study of sporangia
- Identification with reasons
- Herbarium preparation



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SEMESTER 7

B. Sc.: BOTANY INTERNAL PRACTICAL /UNIVERSITY PRACTICAL

Course Code: MJBOT-704-P

Course Title: Pteridophytes, Gymnosperm and Angiosperm

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Specimen A. (Do as Directed)	04
Ex: 2. Specimen B (Do as Directed)	04
Ex: 3. Specimen C. (Do as Directed)	03
Ex: 4. Viva-voice, submission, Journal	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/ Fresh Material/ Herbarium (Given by teacher or as a part of Syllabus) will be mandatory for all the students.



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 7

(Course code: MJ BOT- 705)

Course Title: ANATOMY, PLAT PHYSIOLOGY

Credit: 3

DISCIPLINE SPECIFIC CORE COURSES (MAJOR)							
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	THEORY			
				Credits	Lectures	External	Internal
Degree Course	B.Sc.	MJ BOT-705	ANATOMY, PLAT PHYSIOLOGY	3	45	35 Marks	35 Marks
UNIT	TOPIC						
Unit 1	TOOLS AND TECHNIQUES IN PLANT ANATOMY: Objectives;Introduction;Tools in plant anatomy; Techniques in plant anatomy TYPES OF TISSUES, ANATOMY OF ROOT, SHOOT AND LEAF: Objectives; Introduction; Types of tissues;(Meristematic; Permanent;Specialized tissue) Root anatomy; Shoot anatomy; Leaf anatomy. ○ NORMAL AND ANOMALOUS GROWTH:Objectives; Introduction; Normal behaviour of cambium; Abnormal behaviour of cambium(<i>Bougainvillea</i>, and <i>Boerhaavia</i> (successive rings)),<i>Bignonia</i> (unequal cambium activity, <i>Combretum</i>(<i>Presence of Interxylary/Internal Phloem</i>)<i>Amaranthus: Stem with irregular, successive cambial rings</i>)Activity of cork cambium Applications of Plant Anatomy: 1. Enables to Identify Fragmentary Plant Materials 2. Enables to Detect Adulterants in Crude Drugs 3. Enables to Identify Wood 4. Enables to Identify Archaeological Plant Remains 5. Applied Aspects of Meristem Culture 6. Provides Evidences in Forensic Investigation 7. Provides Characters of Taxonomic Significance.						
Unit 2	Mineral Nutrition of Plants: Essential and non-essential elements. Major elements. Minor or trace elements, General functions of essential elements. Specific role and deficiency symptoms of essential elements. Determination of essentially of mineral elements-Solution culture. Soilless growth or Hydroponics. Thin film growth system. Aeroponics. Stress Physiology: Introduction. Water deficit and drought resistance. (A) In xerophytes (B) In mesophytes. Salt stress and salt resistance. Cold injury and cold resistance. (A) Chilling injury and chilling resistance. (B) Freezing (frost) injury and freezing (frost) resistance. High-temp. (heat) stress and high-temp. (heat) resistance. Heavy-metal stress and heavy metal resistance. Biotic stresses in Plants-Hypersensitive response (HR), Secondary acquired resistance (SAR), Jasmonate						
Unit 3	Special Methods of Nutrition: Special modes of nutrition in angiosperms. Parasitic angiosperms-Total stem parasites, Partial stem parasites, Total root parasites, Partial root parasites. Insectivorous plants. Saprophytic angiosperms. Plant Indicators: Characteristics, Type and Physiological Changes Detection of Organic Acids in Plants :Some common plant sources of organic acids; Preparation of Sample Solution: Tests for Detection of Organic Acid in Plants:						

RECOMMENDED BOOKS

- Plant Anatomy by Katherine Esau
- Anatomy of Seed Plants by Katherine Esau



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SEMESTER 7

Course Title: ANATOMY, PLAT PHYSIOLOGY
Practical/ Lab course (Course code: MJ BOT-706-P)
Credit: 1

DISCIPLINE SPECIFIC CORE COURSE(MAJOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MJ BOT-706-P	ANATOMY, PLAT PHYSIOLOGY	1	30	25Marks (15+15)
UNIT	TOPIC					
	MAKE A PERMENANT / SEMI PERMANENT SLIDE AND OBSERVE • <i>Bougainvillea</i>(Abnormalbehaviour of cambium) • <i>Boerhaavia</i> (successive rings), • <i>Bignonia</i> (unequal cambium activity, • <i>Combretum</i>(Presence of Interxylary/Internal Phloem) • <i>Amaranthus</i>(Stem with irregular, successive cambial rings) • Study of L.s. of the shoot apex • Study of L.s. of the root apex • Cells and Tissues • <i>T.s. leaf –Mangifera</i> • To study deficiency symptoms of mineral nutrients. • To estimate plant water status. • To identify drought-resistant features in xerophytes. Detecting Organic Acids in Plants • Tests for Oxalic Acid • Tests for Tartaric Acid • Tests for Citric Acid • Tests for Malic Acid					

Practical exercises



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SEMESTER 7

B. Sc.: BOTANY INTERNAL PRACTICAL /UNIVERSITY PRACTICAL EXAM

Course Code: MJBOT-706-P

Course Title: ANATOMY, PLAT PHYSIOLOGY

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Specimen A. (Do as Directed)	04
Ex: 2. Specimen B (Do as Directed)	04
Ex: 3. Specimen C. (Do as Directed)	03
Ex: 4. Viva-voice, submission	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/ Fresh Material/ Herbarium (Given by teacher or as a part of Syllabus) will be mandatory for all the students.



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SEMESTER 7

(Course code: MJ BO- 707)

Course Title: Economic botany

Credit: 3

Course Objectives

After the completion of the course, the students will be able to:

PCO 1: Knowledge of Economically Important Vegetables; Understand classification of vegetables

PCO 2: Knowledge of Tropical and Temperate Fruits; Identify major tropical and temperate fruits

PCO 3: Understanding of Fibres and Fibre Yielding Plants; Classify fibres; fibre sources; Understand processing and uses of natural and artificial fibres in textile industries.

PCO 4: Knowledge of Spices and Condiments

PCO 5: Knowledge of Wood and Timber Plants

PCO 6: Understanding of Wood Processing and Products

PCO 7: Knowledge of Cork and its Uses: Understand botanical source and structure of cork.

PCO 8: Knowledge of Sugars and Their Sources; Understand different types of sugars such as:

PCO 9: Knowledge of Starch and Its Manufacture

PCO 10: Economic and Industrial Importance of Plants; Appreciate the importance of plant resources in sustainable development.

PCO 11: Taxonomic and Botanical Understanding; Develop scientific understanding of useful plant diversity.

DISCIPLINE SPECIFIC CORE COURSES (MAJOR)

COURSE	SEMESTER	COURSE CODE	COURSE TITLE	THEORY			
				Credits	Lectures	External	Internal
Degree Course	B.Sc.	MJ BOT-707	Economic botany	3	45	35 Marks	35 Marks
UNIT	TOPIC						
Unit 1	VEGETABLES - Root vegetables: (Sweet Potato, Tapioca, Yams, Beet, Carrot, Radish); - Stem vegetables: (Potato, Suran, Onion); - Herbage vegetables: (Cabbage, Kale, Cauliflower, Spinach, Fenugreek, Purslane) - Fruit vegetables: (Tomato, Jack Fruit, Trapa, Lady's Finger, Capsicum, Bottle Ground, Luffa, Cucumber) - Drying and storage of vegetables and fruits. FRUITS - Tropical fruits in India (Mango, Lime, Sweet Orange, Sour Orange, Grape Fruit, Banana, Guava, Sugar Apple, Jujube, Papaya, etc.... - Temperate fruits in India (Apple, Pear, Plum, Cherry, Apricot, Strawberries)						
Unit 2	FIBRES AND FIBRE YIELDING PLANTS - Classification of fiber, Textile fibres; Surface fibres(cotton); Uses of cotton; Soft or bast fibres (flax, jute); Hard fibres (manila hemp, sisal hemp, coir); Brush fibres(palmyra palm, coconut); Rough weaving fibres; Filling fibres; Natural fabrics; Vegetables sponges; Artificial fibres. SPICES - Cardamom, Cinnamon, Bay Leaf, Nutmeg.						
Unit 3	WOOD AND CORK Diagnostic features of woods; Mechanical properties of wood Strength and other properties of wood; Seasoning of wood; Principal woods of India (Babul, Simul,						



Albizia, Axle Wood, Deodar, Dalbergia, Teak, Sal) Woods for various uses; Veneers; Plywood; Lamin boards

- Cork: Uses of cork; Linoleum;

SUGAR AND STARCH

- Sugars: Palm sugar; Glucose; Fructose; Mannose; Maltose; Honey or Nectar; uses of sugar.
- Starch: manufacture of starch; uses of starch; sago starch; potato starch; rice starch; Beet sugar.

Suggested readings.

- Kochhar, S.L. (2011). Economic Botany in the Tropics, MacMillan Publishers India Ltd., New Delhi. 4th edition
- Economic Botany by S Chand
- Economic Botany (Plants And Human Welfare) By Sharma O P
- Economic Botany – B.P. Pandey, Publisher: S. Chand
- Economic Botany in the Tropics – S.L. Kochhar, Publisher: Laxmi Publications
- Economic Botany – Albert F. Hill
- Economic Botany – Gerald E. Wickens



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 7

Course Title: Economic botany
Practical/ Lab course (Course code: MJ BOT-708-P)
Credit: 1

Practical Course Outcomes (PCOs)

After successful completion of this practical course, students will be able to:

PCO 1: Identification and Botanical Knowledge

PCO 2: Knowledge of Vegetable Crops

PCO 3: Knowledge of Fruit Crops

PCO 4: Knowledge of Fibre Yielding Plants

PCO 5: Knowledge of Spices and Condiments

PCO 6: Knowledge of Timber and Wood Plants

PCO 7: Knowledge of Plant-Based Industrial Products

PCO 8: Skill Development in Plant Specimen Handling

PCO 9: Economic Importance and Applications

PCO 10: Application-Based Learning; sustainable development and economy.

DISCIPLINE SPECIFIC CORE COURSE(MAJOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MJ BOT-708-P	Economic botany	1	30	30Marks (15+15)
UNIT	TOPIC					
	Give Botanical name, local name, family and uses of plant as per syllabus.					
	Exercise :1 Describe Root vegetables.					
	Exercise:2 Describe Stem vegetables.					
	Exercise: 3 Describe Herbage vegetables.					
	Exercise: 4 Describe fruit vegetables.					
	Exercise:5 Describe Tropical fruits in India.					
	Exercise:6 Describe Temperate fruits in India.					
	Exercise:7: Describe fibre yielding plants.					
	Exercise:8: Describe Spices.					
	Exercise:9 Describe Principal woods of India.					
	Exercise:10: Describe manufacture of starch.					



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 7

B. Sc.: BOTANY INTERNAL PRACTICAL /UNIVERSITY PRACTICAL EXAM

Course Code: MJBOT-708-P

Course Title: Economic botany

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Specimen A: Identification (Botanical name, Family, Local name, Economic uses)/ Or describe any one of the following a) Root vegetables b) Stem vegetables c) Fruit vegetables d) Tropical fruits of India e) Temperate fruits of India f) Fibre yielding plants g) Spices h) Manufacture of starch	04
Ex: 2. Specimen B: Describe the given economic plant specimen under the following headings: Botanical name; Family; Habit; Useful part; Economic uses; Morphological nature of useful part	04
Ex: 3. Specimen C: (Identify the given material and write short notes on: Botanical source; Family; Type (Fibre / wood / spice / starch); Uses	03
Ex: 4. Viva-voice, submission, Journal	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/ Fresh Material/ Herbarium (Given by teacher or as a part of Syllabus) will be mandatory for all the students.



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 7

(Course code: SEC Bot 701-P)

Course Title: PLANT BREEDING & CULTIVATION OF MEDICINAL PLANTS

Credit: 2

DISCIPLINE SPECIFIC CORE COURSES (MAJOR)							
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	THEORY			
				Credits	Lectures	External	Internal
Degree Course	B.Sc.	SEC	PLANT BREEDING & CULTIVATION OF MEDICINAL PLANTS	2	30	25	25
UNIT	TOPIC						
Unit 1	PLANT BREEDING 1. Introduction: History of Plant Breeding, the disciplines to be known by a breeder– (Botany-cytogenetics-agronomy-physiology-pathology-entomology-biochemistry- bacteriology- statistics-plant biotechnology), objectives of plant breeding 2. Activities in plant breeding: Creation of new varieties, selection, evaluation, multiplication and distribution 3. Breeding methods for Self- pollinated crops: pure line selection, mass selection, pedigree selection, bulk method of selection, back cross method 4. Breeding methods for cross-pollinated crops: reciprocal and recurrent selection; development of hybrids, synthetics and composites. 5. Hybridization: History, techniques (bagging, tagging etc.) and consequences, objectives, types of hybridization –interspecific, intergeneric, distant hybridization, procedure of hybridization, plant ideotypes, Institutions involved in release of Crop varieties						
Unit 2	Cultivation of Medicinal Plants Scope and Importance of Medicinal Plants. Conservation of endangered and endemic medicinal plants. Propagation of Medicinal Plants: Through seeds and vegetative methods. Preparation and management of the nursery, transplantation, harvesting, post-harvest care. Cultivation techniques, cultural practices of the following medicinal plants:Sarpagandha, Haritaki, Tulshi, , Ginger, Turmeric..						



DETAILED SYLLABUS OF B.Sc. VIII YEAR FOR DEGREE COURSE IN BASIC BOTANY**KSKV Kachchh University, Bhuj - Kachchh**

(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

(Course code: MJ BOT- 801)

Course Title: Modern Tools and Techniques in Botany**[Remote Sensing, GPS, GIS and Environmental Impact Assessment (EIA)]****Credit: 3****DISCIPLINE SPECIFIC CORE COURSES (MAJOR)**

COURSE	SEMESTER	COURSE CODE	COURSE TITLE	THEORY			
				Credits	Lectures	External	Internal
Degree Course	B.Sc.	MJ BOT-801	Modern Tools and Techniques in Botany	3	45	35 Marks	35 Marks
UNIT	TOPIC						
Unit 1	Remote Sensing Introduction to Remote Sensing: Definition, importance, History and development of remote sensing. Principles of electromagnetic radiation, Energy interaction with atmosphere and earth surface, Types of remote sensing: Active and Passive remote sensing. Platforms and Sensors: Definition of platform and sensors, Types of platforms: Ground-based, Airborne, Satellite platforms. Types of sensors: Optical sensors, Thermal sensors, Microwave sensors Satellite Systems and Applications: Introduction to satellite imagery, Indian satellites: IRS series, INSAT series, international satellites: Landsat, NOAA. Applications of remote sensing in: Agriculture, Forestry, Ocean studies, Urban planning and Disaster management.						
Unit 2	GPS and GIS Fundamentals of GPS: Introduction and history of GPS, Components of GPS: Space segment, Control segment, User segment, working principle of GPS, Coordinate systems and map projections, Applications of GPS. Introduction to GIS: Definition, components, Importance and scope of GIS, Hardware and software used in GIS, Data types in GIS: Spatial and Attribute data. GIS Data Models: Vector data model: Point, Line, Polygon, Raster data model. Data input methods: Digitization, Scanning, GPS data entry. Applications of GIS: Environmental monitoring, Watershed management, Land use and land cover mapping, Biodiversity conservation and urban planning.						
Unit 3	Environmental Impact Assessments Introduction to EIA: Definition and objectives of EIA, Importance of EIA in sustainable development, Environmental laws and regulations related to EIA, Environmental clearance procedures, Process of EIA, Environmental Impacts: Impact on air, water, soil, land, flora and fauna. Applications of EIA, Case Studies: EIA for industries, mining projects, highways and urban development.						



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

Course Title:

Practical/ Lab course (Course code: MJ BOT-802-P)

Credit: 1

DISCIPLINE SPECIFIC CORE COURSE(MAJOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MJ BOT-802-P	Modern Tools and Techniques in Botany	1	30	30Marks (15+15)
UNIT	TOPIC					
	[Remote Sensing, GPS, GIS and Environmental Impact Assessment (EIA)] 1. To demonstrate Remote Sensing Platforms: airborne and satellite platforms, and Sensors: optical, thermal and microwave sensors. 2. To study Interpretation of Satellite Images: Identification of land, water, vegetation and urban areas, Basic visual interpretation using tone, texture, shape and pattern 3. Demonstration of GPS device components and Understanding waypoint, route and track functions 4. To study Collection of latitude and longitude from given selected locations 5. To study Recording and plotting of GPS points on map. 6. Demonstration of GIS software with its toolbar and functions. 7. To study Digitization of roads, water bodies and land areas using simple GIS map. 8. To study Classification of land use categories using GIS map. 9. To study Preparation of thematic map using GIS software. 10. To demonstrate standard EIA report format. 11. To study environmental clearance process and Overview of Environmental Management Plan (EMP). 12. To study Preparation of simple EMP report.					

KSKV Kachchh University, Bhuj - Kachchh

(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

B. Sc.: BOTANY INTERNAL PRACTICAL / UNIVERSITY PRACTICAL EXAM

Course Code: MAJBOT-802-P

Course Title: Modern Tools and Techniques in Botany

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Specimen A. (Do as Directed)	04
Ex: 2. Specimen B (Do as Directed)	04
Ex: 3. Specimen C. (Do as Directed)	03
Ex: 4. Viva-voice, submission	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/(Given by teacher or as a part of Syllabus) will be mandatory for all the students.



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

(Course code: MJ BOT- 803)

Course Title: Role of Botany in Sustainable development

[Sustainable development, Environmental Monitoring and Biodiversity management, Carbon sequestration]

Credit: 3

DISCIPLINE SPECIFIC CORE COURSES (MAJOR)							
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	THEORY			
				Credits	Lectures	External	Internal
Degree Course	B.Sc.	MJ BOT-803	Role of Botany in Sustainable development	3	45	35 Marks	35 Marks
UNIT	TOPIC						
Unit 1	1 Sustainable development Introduction to Sustainable Development: Definition, concept, Historical background, Need, Principles and importance of sustainable development. Causes of unsustainability, sustainable development goals, Sustainable development in India: Perspectives and strategies, International efforts on sustainable development. Sustainable Development Practices and Management: Sustainable Agriculture practice: Sustainable farming methods, Organic farming, Rainwater harvesting, Soil conservation techniques. Urbanization and Sustainable Cities: Smart cities concept, Green buildings, Sustainable transport systems. Environmental Education: Environmental awareness programmes.						
Unit 2	Environmental Monitoring and Biodiversity management Environmental Monitoring: Definition, Concept and importance of environmental monitoring, Key environmental parameters: Air, water, soil, noise, and biodiversity, Methods and tools for monitoring (field surveys, sensors, remote sensing), Climate change and environmental monitoring. Biodiversity Management: Concept, need and importance of biodiversity management, People's Biodiversity Registers (PBR): Concept and objectives of PBR, Steps to prepare a PBR: Documentation of local biodiversity, traditional knowledge, and community participation, Case studies and examples from India, Role of governmental and non-governmental organizations						
Unit 3	Carbon sequestration Carbon sequestration: Definition, concept, importance of carbon sequestration. Carbon cycle and its role in climate change, Sources and sinks of carbon. Types of Carbon Sequestration: Terrestrial ecosystems : Forests, grasslands, and wetlands, Soil: Soil organic matter and the role of microorganisms, Marine and coastal: Oceans, mangroves, seagrasses, and other blue carbon ecosystems.. Measurement of carbon stock: Biomass and carbon stock estimation: Basic methods and calculations. Estimation of carbon sequestration in plants. Carbon capture and storage (CCS): Basic concept and methods, Carbon capture, utilization, and storage (CCUS): Overview and applications Carbon offsets and carbon markets, Indian initiatives and global case studies.						



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

Course Title: Role of Botany in Sustainable development (Practical)

[Sustainable development, Environmental Monitoring and Biodiversity management, Carbon sequestration]

Practical/ Lab course (Course code: MJ BOT-804-P)

Credit: 1

DISCIPLINE SPECIFIC CORE COURSE(MAJOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MJ BOT-804-P	Role of Botany in Sustainable development	1	30	30 Marks (15+15)
UNIT	TOPIC					
	- Demonstration of Sustainable Development Goals (SDGs) through charts, posters and multimedia tools. - Discussion on sustainable development practices in India. - Survey on Environmental Awareness and Sustainable Practices through conducting a simple questionnaire survey, Collection of information on water conservation, waste management and energy saving practices and preparation of survey report. - Demonstration of Sustainable Agricultural Practices: Organic farming methods, Compost preparation, Rainwater harvesting models, Soil conservation techniques - To study concept of smart city, green building and sustainable transport through charts, posters and multimedia tools. - Demonstration of Environmental Monitoring Instruments: Air quality monitoring, Water quality monitoring, Noise measurement, Soil analysis (any one instrument of each) - Measurement of Basic Environmental Parameters – Temperature, pH, Turbidity, Dissolved oxygen, Noise level with recording and tabulation of data. - Study of People's Biodiversity Register (PBR) - Demonstration of PBR format and documentation methods for local biodiversity - To study Local Biodiversity Survey and Documentation through Identification of local flora and fauna, Recording traditional knowledge from local communities and preparation of simple biodiversity register/report. - Demonstration of carbon sources and sinks and Introduction to carbon capture and storage (CCS) systems through charts, posters and multimedia tools. - Estimation of Biomass in Plants through measurement of plant height and girth, Estimation of above-ground biomass using simple methods, Recording and calculation of biomass values. - Demonstration of soil carbon and forest carbon estimation methods and use of simple carbon calculators. - Estimation of Carbon Sequestration in Local Vegetation through Collection of field data from trees, estimation of carbon storage using biomass values and preparation of carbon sequestration report.					



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

Course Title: Role of Botany in Sustainable development

[Sustainable development, Environmental Monitoring and Biodiversity management, Carbon sequestration]

B. Sc.: BOTANY INTERNAL PRACTICAL / UNIVERSITY PRACTICAL EXAM

Practical/ Lab course (Course code: MJ BOT-804-P)

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Specimen A. (Do as Directed)	04
Ex: 2. Specimen B (Do as Directed)	04
Ex: 3. Specimen C. (Do as Directed)	03
Ex: 4. Viva-voice, submission, Journal	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/ (Given by teacher or as a part of Syllabus) will be mandatory for all the students.



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

(Course code: MJ BOT- 805)

Course Title: Environmental laws and Legislation

[National agencies, Acts related to environment and biodiversity, and International Conventions and Conferences]

Credit: 3

DISCIPLINE SPECIFIC CORE COURSES (MAJOR)							
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	THEORY			
				Credits	Lectures	External	Internal
Degree Course	B.Sc.	MJ BOT-805	Environmental laws and Legislation	3	45	35 Marks	35 Marks
UNIT	TOPIC						
Unit 1	National Agencies: Introduction, Role, Objectives and Functions of Animal Welfare Board of India (AWBI), National Biodiversity Authority (NBA), Wildlife Crime Control Bureau (WCCB), Compensatory Afforestation Fund Management and Planning Authority (CAMPA), Ministry of Environment, Forest and Climate Change (MoEFCC), Forest Survey of India (FSI), National Biodiversity Authority (NBA), Wildlife Institute of India (WII), Botanical Survey of India (BSI), Indian Meteorological Department.						
Unit 2	Environmental Acts: Basic Introduction of The Environment (Protection) Act, 1986, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biological Diversity Act, 2002, The Ozone Depleting Substances (Regulation and Control) Rules 2000, Public Liability Insurance Act, 1991, The National Green Tribunal Act, 2010, Coastal Regulation Zone, Compensatory Afforestation Fund Act, 2016, Wetland (Conservation and Management) Rules 2010 & 2017.						
Unit 3	International Conventions and Conferences Ramsar Convention 1971, Stockholm Convention 2001, CITES 1973, Convention on Biological Diversity 1992, Montreal Protocol 1987, Kyoto Protocol 1997, United Nations Framework Convention on Climate Change (UNFCCC) 1992, United Nations Environment Programme (UNEP), Aichi Biodiversity Targets – 2010, The Earth Summit (1992), World Wide Fund for nature (WWF), Brundtland commission (WCEB), Environmental Impact Assessment notification.						



Suggested readings.

BOOKS

- Trivedi, P. R. and Singh, U. K. Global environmental Education
- ☐ Botkin, D. B. and Keller, E. A. Environmental Science: Earth as a living Planet
- ☐ Kaufman, D. G. and Fraz, C. M. Biosphere 2000: Protecting our Global Environment
- ☐ Chary, EP Fundamentals of Ecology
- ☐ The State of India's Environment: The second citizen's Report Centre for Science and Environment
- ☐ B. C. Rana. Biomonitoring
- ☐ Botkin, E. B. *et al.* Changing the Global Environment: Perspectives on Human Involvement
- ☐ Saxena, A. B. Environmental Education
- ☐ Khoshoo, T. N. Environmental priorities in India and sustainable development
- ☐ Mansfield: Effect of Air pollution on plants

KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)
SEMESTER 8

Course Title: Environmental laws and Legislation (Practical)

[National agencies, Acts related to environment and biodiversity, and International Conventions and Conferences]

Practical/ Lab course (Course code: MJ BOT-806-P)

Credit: 1

Course Outcome & Objectives

1. After the completion of the course the students will be able to: They will understand the principles of plant classification and nomenclature, including the use of taxonomic keys and floras.

DISCIPLINE SPECIFIC CORE COURSE(MAJOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MAJ BOT-806-P	Environmental laws and Legislation	1	30	30 Marks (15+15)
UNIT	TOPIC					
	1	Role and objectives of Wildlife Institute of India (WII).				
	2	Role and objectives of Botanical Survey of India (BSI).				
	3	Role and objectives of National Biodiversity Authority (NBA).				
	4	Role and objectives of Forest Survey of India (FSI).				
	5	Role and objectives of The Environment (Protection) Act, 1986.				
	6	Role and objectives of The National Green Tribunal Act, 2010				
	7	Role and objectives of Biological Diversity Act, 2002.				
	8	Role and objectives of The Ozone Depleting Substances (Regulation and Control) Rules 2000.				
	9	Role and objectives of Ramsar Convention 1971.				
	10	Role and objectives of Montreal Protocol 1987				
	11	Role and objectives of United Nations Environment Programme (UNEP).				
	12	Role and objectives of Environmental Impact Assessment.				



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SEMESTER 8

Course Title: Environmental laws and Legislation (Practical)

[National agencies, Acts related to environment and biodiversity, and International Conventions **Practical/ Lab course B.**

Sc.: BOTANY INTERNAL PRACTICAL / UNIVERSITY PRACTICAL EXAM

(Course code: MJ BOT-806-P)

Credit: 1

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Specimen A. (Do as Directed)	04
Ex: 2. Specimen B (Do as Directed)	04
Ex: 3. Specimen C. (Do as Directed)	03
Ex: 4. Viva-voice, submission, Journal	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/ (Given by teacher or as a part of Syllabus) will be mandatory for all the students.



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

Course Title: Pharmacology, Industrial Botany and Botany in daily life

(Course code: MN BOT-807)

Credit: 1

DISCIPLINE SPECIFIC CORE COURSE(MINOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MN BOT-807	Pharmacology, Industrial Botany and Botany in daily life	1	30	70Marks (35+35)
UNIT	TOPIC					
1	Fundamentals of Pharmacology and Medicinal Plants Introduction to Pharmacology: Definition, scope and importance of pharmacology, Relationship between botany and pharmacology, Medicinal Plants and Their Uses Importance of medicinal plants in traditional medicine, Introduction to: Ayurveda. Active molecules in medicinal plants: Alkaloids, Glycosides, Tannins, Flavonoids, Essential oils Common Medicinal Plants: Botanical name, family and medicinal uses of: Tulsi, Neem, Ashwagandha, Aloe vera, Turmeric, Ginger, Amla Ethnobotany and Traditional Knowledge: Definition and scope of ethnobotany, Tribal and folk medicine, Traditional medicinal practices in India.					
2	Introduction to Industrial Botany Definition, scope and importance of industrial botany, Relationship between botany and industries. Industrial uses of: Cotton, Jute, Bamboo, Rubber, Coconut. Non-Timber Forest Products (NTFPs): Definition and importance. Plant-Based Industries: Paper industry, Textile industry, Sugar industry, Tea and coffee industries, Essential oil industry, Food industries, fermentation industries, Floriculture and horticultural industries. Industrial Applications of Algae and Fungi, Small-scale plant-based industries Herbal product preparation and marketing					
3	Introduction to Botany in Daily Life Definition and scope, Importance of plants in human life, Relationship between plants and human well-being. Plants Used in daily life: Indoor and ornamental plants, Air purifying plants, Kitchen garden plants, Nutritional importance of plant products, Spices and condiments used in daily life, Green buildings and green offices, Role of plants in pollution control, Urban forestry and roadside plantation, vertical gardening, Eco-friendly lifestyle practices, Role of community participation in plant conservation.					



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

Course Title: Pharmacology, Industrial Botany and Botany in daily life (Practical)

Practical/ Lab course (Course code: MN BOT-808-P)

Credit: 1

DISCIPLINE SPECIFIC CORE COURSE(MINOR)						
COURSE	SEMESTER	COURSE CODE	COURSE TITLE	PRACTICAL		
				Credits	Lectures	Internal/External
Degree Course	B.Sc.	MN BOT-808-P	Pharmacology, Industrial Botany and Botany in daily life	1	30	30 Marks (15+15)
UNIT	TOPIC					
	1) Study of morphology and medicinal uses of important medicinal plants 2) Collection, preservation and labelling of medicinal plant specimens 3) Demonstration using case studies and traditional medicine records 4) Field survey and documentation of medicinal plant diversity 5) Study of morphology and industrial uses of important plants. 6) Collection, preservation and labelling of industrial plant specimens. 7) Processing methods of cotton, jute and bamboo products. 8) Study of ornamental, medicinal and kitchen garden plants. 9) Compost preparation using household biodegradable waste. 10) Field survey and report preparation on sustainable practices in local communities.					

References:

1. Medicinal Plants by K.R. Kirtikar and B.D. Basu
2. Textbook of Pharmacognosy by C.K. Kokate
3. Medicinal Botany by S.K. Jain
4. Pharmacognosy and Phytochemistry by Biren Shah and A.K. Seth
5. Herbal Drug Technology by S.S. Agrawal
6. Economic and Medicinal Plant Biotechnology by S.S. Purohit and S.P. Vyas
7. Economic Botany by S.L. Kochhar
8. Economic Botany in the Tropics by S.L. Kochhar
9. Plant Biotechnology by H.S. Chawla
10. Medicinal Plants by K.R. Kirtikar and B.D. Basu
11. Textbook of Economic Botany by V. Verma and V.K. Agarwal
12. Biotechnology by P.K. Gupta



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

Course Title: Pharmacology, Industrial Botany and Botany in daily life (Practical)

Practical/ Lab course (Course code: MN BOT-808-P)

B. Sc.: BOTANY INTERNAL PRACTICAL / UNIVERSITY PRACTICAL EXAM

Credit: 1

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Specimen A. (Do as Directed)	04
Ex: 2. Specimen B (Do as Directed)	04
Ex: 3. Specimen C. (Do as Directed)	03
Ex: 4. Viva-voice, submission	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/ Fresh Material/ Herbarium (Given by teacher or as a part of Syllabus) will be mandatory for all the students.

(Dr.Ekta Joshi)

BOS CHAIRMAN, MEMBER OF AC

Assistant Professor (Head, Department of Botany)

GPSC Class II (Gazetted)

R.R. Lalan Government College

Bhuj-Kachchh



KSKV Kachchh University, Bhuj - Kachchh
(Effective from June 2026-27 UNDER NEP-2020)

SEMESTER 8

Course Title: Pharmacology, Industrial Botany and Botany in daily life (Practical)
Practical/ Lab course (Course code: MN BOT-808-P)

B. Sc.: BOTANY INTERNAL PRACTICAL / UNIVERSITY PRACTICAL EXAM

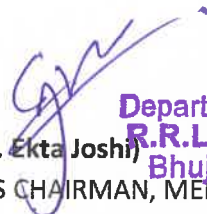
Credit: 1

Total Marks: 15

Instructions: Strictly follow the instructions given by examiner(s).

Ex: 1. Specimen A. (Do as Directed)	04
Ex: 2. Specimen B (Do as Directed)	04
Ex: 3. Specimen C. (Do as Directed)	03
Ex: 4. Viva-voice, submission	04

Note: Excursion/ Project work/ Visit/ Tour/ report and submission of specimens / Charts/ Model/ Fresh Material/ Herbarium (Given by teacher or as a part of Syllabus) will be mandatory for all the students.


HEAD
Department of Botany
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