

GUJARAT UNIVERSITY

Ahmedabad



B. Sc. – BOTANY (Multi disciplinary)

Semester – I

(Theory and Practical)

BASED ON NEP 2020 GUIDELINES

Effective from June - 2023

course Botany Minor	Botany Theory	Botany Practical
Paper Code	BOT MDC - 114 T	BOT MDC-114 P
Credit	02 credit	2 credit
Teaching hours / week	02hours	04 hours
Examination marks (External + Internal)	50 marks	50 marks
Semester end External Examination Marks	25 marks	25 marks
Internal Exam. Marks	25 marks	25 marks
Semester end External Examination Duration	02 hours	04 hours

- Detailed Curriculum has been designed as per UGC NEP 2020 guidelines and KCG framework system.
- In Semester I as DSC MINOR (Botany) -there shall be one theory paper having two units each and one practical paper also having 2 credits each.
- For full exposure to plant science, students must be taken on a Botanical excursion / Field Trip or visit to a Research /Academic Institute of relevance
- Science / Space exhibition, Participation in science based seminars to enhance the study experience is advised.
- Students must record the laboratory work done in a journal. The journal is to be certified by the Teacher in-charge and Head of the department.
- Duly certified journals have to be produced while appearing at the time of university exam.
- Project work should be in tune with the syllabus and the presentation will carry due weight-age



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B. Sc. – Semester – I
BOTANY (Multidisciplinary)

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Name: BOTANY IN ENVIRONMENTAL SCIENCE

Course code: MDC-BOT 114 T (Theory)

Credits: 02

Teaching Hours: 02 hours / Week

Total Marks: 50(External 25 + Internal 25) Marks

Learning Objectives:

- To understand the multidisciplinary aspect of botany and its relation with environmental science.
- To understand that environmental studies are incomplete without knowledge of plant science.
- To study the ecosystem its components and various energy equations, ecological pyramids.
- To understand soil as an environmental factor, its components, its need for plants, formation of soil and soil conservation.
- To teach practical aspects involved in botany like chart making, soil analysis, etc. useful in environmental studies
- To make the students aware of the wide scope of Botany as an interdisciplinary subject.

Learning Outcomes

By the end of the course, the students will be able to:

- Understand the environment by knowing about Plants in various ecosystems and purpose of studying ecosystems as well as ecosystem dynamics
- Understand basic soil environment and be able to perform soil analysis vis a vis soil texture, pH, electrical conductivity, etc.



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UNIT – A1 : Ecology (15 hours)

1. Introduction, Scope and Branches of Ecology
2. Ecosystems :
Kinds of Ecosystems: Natural, Artificial
Ecological Pyramids, Productivity of an Ecosystem, Energy flow in an Ecosystem, Biogeochemical Cycles- Nitrogen, Sulphur
Components of Freshwater Ecosystem (Pond)
Components of Terrestrial Ecosystem (Grassland)
3. Biotic Factors :
Symbiosis: Mutualism, Proto-cooperation, Commensalism
Antagonism: Predation, Parasitism, Antibiosis, Competition, Saprophytism
4. Sustainable Biodiversity, IUCN Categories of threat and list of endangered plant species, Importance of Biodiversity

UNIT – A2 : Soil Science. (15 hours)

- Edaphic factor: Importance of soil, Effect of soil on plants
- Composition of soil, origin and development of soil, soil profile
- Soil composition, Soil texture
- soil water, water holding capacity
- Soil-air, soil organisms
- Electrical conductivity of soils
- soil erosion
- soil conservation

Suggested Reading:

- (i) A Textbook of Botany vol. I and II S.N. Pandey, P. S. Trivedi and S. P. Misra., Vikas Publication House Pvt. Ltd.
- (ii) Collage Botany Vol. I & II Das, Dutta, Gangulee and Kar., New Central Book Agency
- (iii) Plants and Environment by Daubenmire (Wiley-Eastern Pvt. Ltd., New Delhi)
- (iv) Ecology and Environment by P.D.Sharma Rastogee Publication
- (v) Fundamentals of Ecology- P. Odum
- (vi) Indian Manual of Plant Ecology – R .Misra & G. S. Puri
- (vii) Soil Science by E. J. Plaster



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Name: BOTANY IN ENVIRONMENTAL SCIENCE

Course code: MDC 114 P (Practical) (Based on BOT 114T)

Credits: 02

Teaching Hours: 04hours / Week

Total Marks : 50 (External 25 + Internal 25) Marks

Objective:

- To perform practical to understand the theory taught.
- To understand laboratory techniques.

Learning Outcome: After doing the practical, the student will be able to:

1. Understand lab work for Botany as a core/minor/interdisciplinary subject
2. Understand microscopy and know about care and maintenance of microscopes
3. Maintain practical journal with diagrams, charts and tables
4. Understand, in practical, theory aspects taught.

List of Practicals

(4 hours per practical)

1. Study of Microscopy
2. Study of Chart of Ecosystem classification
3. Study of artificial ecosystem by Terrarium chart/model
4. To study components of pond ecosystem
5. To study components of grassland ecosystem
6. Study of Biotic factors-I
7. Study of Biotic factors-II
8. Study of Ecological Instruments- Soil thermometer, Sling psychrometer, Anemometer
9. Study of Soil Profile- Chart/model
10. Study of Soil texture, Types of soil
11. Electrical conductivity of soil
12. Study of soil Water holding capacity



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13. Study of Soil pH
14. Rapid test for soil CO₂, NO₃
15. Internal Test

Suggested Reading:

1. Practical Botany vol. I & II By Bendre and Kumar, Rastogi Publication.
2. Practical Botany by S. C. Santra, Chettarjee and Das, New Central Book Agency.
3. Experimental Plant Ecology by Pratim Kapur and Sudha Rani, CBS Publication.

Suggested Assessment methods:

Test, Quiz, Presentation, Group Discussion, Abstract writing, Assignment, Project making, Chart making, etc.