M. G. Science Institute, Ahmedabad

Autonomous | Affiliated to Gujarat University, Ahmedabad

(Managed by The Ahmedabad Education Society)

Department of Botany

Bachelor of Science (Hons.) in Botany

(Effective from Academic Year 2026-27)

Annexure 3: **Semester- VI**

Botany Minor	BOE-364	Plant Diseases and Management (Theory)

COs	COGNITIVE ABILITIES	COURSE OUTCOMES
CO1	REMEMBERING	Define and explain the basic concepts of plant pathology, including the nature, causes and classification of plant diseases. Identify common plant pathogens (fungi, bacteria, viruses, nematodes, and phytoplasmas) and describe their modes of infection and spread.
CO2	UNDERSTANDING	Recognize and diagnose major symptoms of plant diseases in the field and laboratory settings. Explain the disease cycle and the factors influencing disease development (the disease triangle: host, pathogen, environment).
CO3	ANALYZING	Distinguish between infectious and non-infectious plant diseases. Describe principles of epidemiology and their application in disease forecasting and management.
CO4	EVALUATING	Apply integrated disease management (IDM) strategies, including cultural, biological, chemical, and genetic control methods. Evaluate the role of resistant varieties and plant breeding in disease management.

	PO 1	PO 2	PO 3	PO 4	PO 5
CO 1	1	1	1		
CO 2	1		1		
CO 3		1	1		
CO 4	1		1		

Teaching Hours: 02 hours / Week

Unit	**Contents**	**2 Hours**
Unit 1: Plant Viruses & Bacteria	A. Plant Viruses – Structure of Viruses, Viral Parasitism and Morphological Symptoms	
	B. Disease caused by Viruses and their Management: a. Yellow Vein Mosaic of Okra b. Tobacco Mosaic Virus (TMV)	
	C. Plant Pathogenic Bacteria – Structure of Bacterium, Mode of Infection, Symptoms of Diseases	
	D. Bacterial Diseases of Plant and their Management: a. Citrus Canker b. Scab of Potato	
Unit 2: Plant Pathogenic Fungi and Parasitic Nematodes	**Contents**	**2 Hours**
	A. Plant Pathogenic Fungi – Structure of Fungal Cell, Mode of Infection, Symptoms of Fungal Diseases	
	B. Fungal Diseases of Plant and their Management: a. Stripe Rust of Wheat b. Tikka disease of Groundnut	
	C. Plant Parasitic Nematodes – Structure of Nematode, Mode of Infection, Symptoms Caused by Nematodes	
	D. Nematodes Diseases of Plant and Their Management: a. Root Knot Disease of Tomato b. Molya Disease of Wheat	

References:

1	Plant Diseases and their Management by Tulsipada Mustafee (Aditya Books, India) — A broad Indian-context book covering fungi, bacteria, nematodes, viruses, non-parasitic diseases and integrated management. adityabooks.in
2	Fundamentals of Plant Pathology by Sanjeev Kumar (NIPA Books, India) — Introductory treatment, good for undergraduates. nipabooks.com
3	Plant Pathology by B. P. Pandey (S. Chand, India) — Classic Indian textbook covering major crops, disease principles, with many illustrative plates. S Chand Publishing
4	Diseases of Horticultural Crops: Identification and Management (With Colour Illustrations) by Sanjeev Kumar (NIPA Books, India) — Focus on horticultural crops (vegetables, fruits, ornamentals) with colour illustrations. nipabooks.com
5	Integrated Plant Disease Management by R. C. Sharma & J. N. Sharma (Om Publications, India) — Emphasis on integrated (non-chemical + chemical) approaches, especially suited for Indian scenario. ompublications.in
6	Plant Pathology and Disease Management: Principles and Practices by S. Parthasarathy, P. Lakshmidevi, V. K. Satya, C. Gopalakrishnan (CRC Press, international) — Relatively recent (2024) broader/global perspective.
7	Current Trends in Plant Disease Diagnostics and Management Practices edited by Pradeep Kumar, Vijai Kumar Gupta, Ajay K. Tiwari, Madhu Kamle (Springer) — Focus on diagnostics, molecular tools, modern management. SpringerLink
8	Detection, Diagnosis and Management of Soil-borne Phytopathogens edited by Udai B. Singh, Ravindra Kumar, Harikesh Bahadur Singh (Springer) — Specialist book on soil-borne diseases. SpringerLink
9	Plant Pathogens: Detection and Management for Sustainable Agriculture edited by Zafar Abbas, Madhu Kamle, Pradeep Kumar, Priyanka Singh, Ajay K. Tiwari (Apple Academic Press) — Focus on sustainable agriculture, detection, global perspectives. Summerfield Books
10	Diseases in Plants and their Management by P. C. Trivedi (India) — Compiled research/critical review on major crop diseases of India.
11	Handbook of Plant Disease Identification and Management by Aglave (CRC Press, international) — A handbook style with identification + management focus. madrasshoppe.com
12	Nematode Diseases of Crops and their Management by Parvatha P. Reddy (Springer Singapore) — Specialist coverage on nematode diseases, significant for many crops. SpringerLink
13	Principles and Management of Plant Diseases by Rajalakshmi & K. Sathya (Agrobios, India) — Good moderate-level Indian publication oriented around principles, epidemiology, forecasting etc.

Botany Minor	BOE-364	Plant Diseases and Management (Practical)

Teaching Hours: 04 hours / Week

No.	Practical
1	Study of Virus (Structure)
2	Study of Yellow Vein Mosaic of Okra
3	Study of Tobacco Mosaic Virus (TMV)
4	Study of Plant Bacterium (Structure)
5	Study of Citrus Canker
6	Study of Scab of Potato
7	Study of Fungal Cell
8	Study of Stripe Rust of Wheat
9	Study of Tikka disease of Groundnut
10	Study of Plant Parasitic Nematodes (Types)
11	Study of Plant Parasitic Nematode - Root Knot Disease of Tomato
12	Study of Plant Parasitic Nematode - Molya Disease of Wheat

Minor-BOE- 364- Practical Exam Format

Maximum marks – 25 **Date:** **Time: 3 hours**

Q.1	Identify and describe A & B (Unit 1)	08 Marks
Q.2	Identify and describe C & D (Unit 2)	08 Marks
Q.3	Project report / Submissions	05 Marks
Q.4	Journal & Viva	04 Marks