

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY
COURSE CURRICULUM

PART- A: Introduction		
Program: Bachelor in Life Science (Diploma / Degree/Honors)	Semester - IV	Session: 2024-2025
1 Course Code	BOSE- 02 T	
2 Course Title	Microbiology and Phytopathology	
3 Course Type	Discipline specific Elective (DSE)	
4 Pre-requisite (if, any)	<i>As per program</i>	
5 Course Learning Outcomes (CLO)	<p>At the end of this course, the students will be able to get</p> <ul style="list-style-type: none"> ➢ Basic idea of different microbes present in biotic and abiotic environment. ➢ Knowledge of principle concept and methods in the field of Microbiology and Phytopathology ➢ Idea of living, non living and environmental causes of plant diseases. ➢ Knowledge of different technique to isolate microbes study their cultural characteristics. ➢ How disease occurs by microbes, their identification and control measures. 	
6 Credit Value	3 Credits	<i>Credit = 15 Hours - learning & Observation</i>
7 Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course		
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)		
Unit	Topics (Course contents)	No. of Period
I	Microbiology: <ul style="list-style-type: none"> ❖ General account, distribution and classification of microorganism. ❖ Major microbes of air soil water and food ❖ Isolation and cultivation of microorganism ❖ Important tools and techniques used in microbiological studies. 	12
II	Plant pathology: <ul style="list-style-type: none"> ❖ Nature and concept of diseases in plants, ❖ History and development of plant pathology, contribution of Indian plant pathologist in India and abroad, pathology and trends in 21st century ❖ Symptom of parasitic and non-parasitic diseases, ❖ Classification of plant diseases. ❖ Important plant diseases caused by different Pathogens ❖ Plant quarantine ❖ HR and hypersensitivity 	11
III	Techniques of Studying Plant Diseases: <ul style="list-style-type: none"> ❖ Field Studies, Collection of samples and its preservation. ❖ Sterilization technique- Standard Methods of sterilization - Physical methods, Chemical methods, Radiation methods, ❖ Isolation technique: Preparation of different media for growth of pathogen by using standard inoculation techniques like- plate streak, serial dilution and pour plate methods to obtain a pure culture. ❖ Staining Technique: Nature and Types of stains, ❖ Preservation : methods of preservation of culture 	11
IV	Host Parasite Relation: <ul style="list-style-type: none"> ❖ Terms and concept ❖ Disease cycle and environmental relations ❖ Plant disease dissemination ❖ Role of enzymes and toxins in pathogenesis and mode of infection, ❖ Inoculums and inoculums potential ❖ Koch's postulates ❖ Defense mechanism in plant against pathogens, ❖ Prevention and control of plant diseases 	11
Key words Microorganism, Disease, Pathogens , Culture		
Signature of Convener & Members (CBoS):		

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended -

1. Bridges, P. (1998) Molecular Variability Of Fungal Pathogens. CAB
2. Bilgrami, K. S. and Dubey, H. C. (1985) Plant Pathology, Vikas Publ. House, Sahibabad U.P.
3. Ali, s. s. and Kulshreshtha, p. (1986) plant pathology, adeeb educational, Raipur.
4. Singh, R. S. (1980) Plant Pathology, Oxford IBH Publ. Co, New Delhi.
5. Malhotra R. Plant Pathology Publisher: McGraw Hill Education India

Reference Books Recommended -

1. Agrios, G. N. (1997) Plant Pathology, Academic Press, London

Online Resources -

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egyankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

Online Resources -

- e-Resources / e-books and e-learning portals

1. <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/plant-pathology#:~:text=Plant%20pathology%20is%20a%20science,parasitic%20microorganisms%20that%20cause%20disease.>
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4600171/>
3. <https://bnrc.springeropen.com/articles/10.1186/s42269-021-00627-6>
4. <https://www.sciencedirect.com/science/article/abs/pii/S0065308X08604339>
5. <https://www.researchgate.net/publication/371501301> Fundamentals of Plant Pathology

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): 30 (By Course Teacher)	Internal Test / Quiz-(2): 20 +20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam (ESE): 70	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts, 1 out of 2 from each unit-4x10=40 Marks	

Name and Signature of Convener & Members of CBoS:

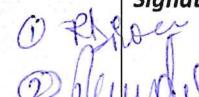
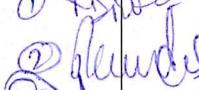
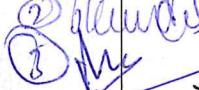
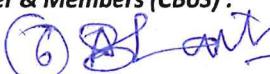
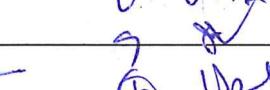
① R. Sivay
 ② Hemal
 ③ M.
 ④ S. S.
 ⑤ A. S.
 ⑥ D. S.
 ⑦ Andlin
 ⑧ T. S.
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 ⑩ S. S.

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY
COURSE CURRICULUM

PART- A: Introduction		
Program: Bachelor in Science (Diploma / Degree/ Honors)	Semester - IV	Session: 2024-2025
1 Course Code	BOSE-02 P	
2 Course Title	Lab course 02 (Microbiology and Phytopathology)	
3 Course Type	Discipline specific Elective (DSE)	
4 Pre-requisite (if, any)	<i>As per program</i>	
5 Course Learning Outcomes (CLO)	<p>At the end of this course, the students will be able to get</p> <ul style="list-style-type: none"> ➤ Basic idea of microbes. ➤ Culture of microbes in the laboratory ➤ How disease occurs by microbes ➤ Basic idea of host parasite interrelationship ➤ Control measure of pathogen by different biological sources. 	
6 Credit Value	1 Credits	<i>Credit = 30 Hours Laboratory or Field learning/Training</i>
7 Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course		
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)		
Module	Topics (Course contents)	No. of Period
Lab./Field Training/Experiment Contents of Course	<ul style="list-style-type: none"> ❖ Calibration of microscope. ❖ Study of symptoms of various plants disease caused by viruses, bacteria and fungi. ❖ Sterilization of glass wares by detergent, chromic acid and dry sterilization ❖ Preparation and sterilization of culture media NAM, PDA, to culture bacteria and fungi respectively. ❖ Isolation of micro-organism from soil, water and air by using standard inoculation technique. ❖ Identification of the isolated fungi by slide preparation. ❖ Micrometry – measurement of length and width of spore/ conidia of the isolated /given fungi. ❖ Preparation of camera lucida diagram of the isolated / given fungi. ❖ Cultural characteristics the the cultured bacteria. ❖ Gram staining of Bacteria ❖ Host parasite relationship- slide preparation of infected / diseased portion of the host to study host parasite relationship by smearing and section cutting methods isolated from local field. ❖ Demonstration of the effect of various bio-pesticides (essential oils, neem, turmeric and garlic) against microbe/pathogens ❖ Preparation of herbarium of different plant diseases of local area 	30
Keywords	Disease, symptoms, medium, pathogenesis	

Signature of Convener & Members (CBoS):

① R. B. S. 
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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended -

1. Experiments In Microbiology, Plant Pathology And Biotechnology By K. R. Aneja. Publisher New Age International

Online Resources-

➤ e-Resources / e-books and e-learning portals

1. <https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/plant-pathology#:~:text=Plant%20pathology%20is%20a%20science,parasitic%20microorganisms%20that%20cause%20disease>
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4600171/>
3. <https://bnrc.springeropen.com/articles/10.1186/s42269-021-00627-6>
4. <https://www.sciencedirect.com/science/article/abs/pii/S0065308X08604339>
- 1) <https://www.researchgate.net/publication/371501301> Fundamentals of Plant Pathology

Online Resources-

➤ e-Resources / e-books and e-learning portals

- <https://efaidnbmnnibpcapcglclefindmkaj/> <https://mis.alagappauniversity.ac.in/siteAdmin/dde->
- https://admin/uploads/3/PG_M.Sc._Botony_34631%20MICROBIOLOGY%20AND%20PLANT%20PATHOLOGY.pdf

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): 15 (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10 Assignment/Seminar +Attendance - 05 Total Marks - 15	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE): 35	Laboratory / Field Skill Performance: On spot Assessment A. Performed the Task based on lab. work - 20 Marks B. Spotting based on tools & technology (written) - 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	Managed by Course teacher as per lab. status

Name and Signature of Convener & Members of CBoS:

① R. Broer
② Neeru
③ Me
④ Siva
⑤ Deepa
⑥ R. Arun
⑦ Sudhanshu
⑧ Brij
⑨ A
⑩ Virender