

Syllabus for Bachelor of Agriculture

PLANT PATHOLOGY

Subject code: **16AS0108**

Subject Name: **Fundamentals of Plant Pathology**

B. Sc. (Hons.) Agri., **First Year (Sem.-I)**

Objective:

To enrich the students with the basic knowledge of Plant Pathology

Credit Earned: 2+1= 3 Credits

Course Outcomes:

After completion of this course, student will be able to:-

1. Identify the plant diseases caused by various disease organisms.
2. Isolate the various disease organisms in the laboratory.

Teaching and Evaluation Scheme

Teaching Scheme (hours)		Credits	Theory Marks			Practical Marks		Total Marks
Theory	Practical		ESE (E)	IA	CSE	Viva (V)	Term Work (TW)	
2	2	3	50	30	20	25	25	150

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Contents:

Unit	Topics	Contact Hours
Theory		
1.	Introduction: Importance of plant diseases, scope and objectives of Plant Pathology	1
2.	History of Plant Pathology with special reference to Indian work	1
3.	Terms and concepts in Plant Pathology	1
4.	Causes and factors affecting disease development: Disease triangle and tetrahedron and classification of plant diseases	2
5.	Important plant pathogenic organisms (different groups): fungi, bacteria, phytoplasma, spiroplasma, viruses, viroids, algae, protozoa and phanerogamic plant parasites with example of diseases caused by them	2
6.	Diseases and symptoms due to abiotic causes	1
7.	Pathogenesis, Role of enzymes, toxins and growth regulators in disease development	2
8.	Defence mechanism in plants	1
9.	Epidemiology: Factors affecting disease development	1
10.	Fungi: General characters, definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modification of thallus, reproduction (asexual and sexual)	2
11.	Nomenclature, Binomial system of nomenclature, rules of nomenclature, classification of fungi	1
12.	Key to divisions, sub-divisions, orders and classes	1
13.	Bacteria and mollicutes: General morphological characters	1
14.	Basic methods of classification and reproduction	1
15.	Viruses: Nature, architecture, multiplication and transmission	1
16.	Growth and reproduction of plant pathogens	1

17.	Liberation, dispersal and survival of plant pathogens	1
18.	Types of parasitism and variability in plant pathogens	1

Unit	Topics	Contact Hours
Practical		
1.	Acquaintance with various laboratory equipments and microscopy	1
2.	Preparation of media, isolation and Koch's postulates	1
3.	General study of different structures of fungi	1
4.	Study of symptoms of various plant diseases	1
5.	Study of representative fungal genera	1
6.	Staining and identification of plant pathogenic bacteria	1
7.	Transmission of plant viruses	1
8.	Study of phanerogamic plant parasites	1
9.	Study of fungicides and their formulations	1
10.	Methods of pesticide application and their safe use	1
11.	Calculation of fungicide sprays concentrations	1

Reference Books:

1. Modern Plant Pathology
Dube H. C. Publisher: Scientific Publication Ltd.
2. Plant Pathology
Agrios G. N Publisher: Academic Press
3. Plant Pathology
Alica D. and Jayalakshmi C. Pub. A. E.
4. Introduction to Principles of Plant Pathology
Singh R. S. Pub. Oxford
5. A text book of Fungi, Bacteria and Viruses
Dube H. C.
6. Introductory Mycology
Aleopoulos C. J., Mims C. W. and Blackwell M., Willey New York
7. Fundamentals of Plant Bacteriology
Jayaraman J. and Verma J. P. Kalyani Publishers Pvt. Ltd., New Delhi
8. Essentials of phytopathological techniques

Karuna Vishunava and S. J. Kolte. Kalyani Publishers Pvt. Ltd.,
New Delhi

9. Experiments in Microbiology, plant pathology and biotechnology

K. R. Aneya New Age International New Delhi

10. An Introduction to fungi

H. C. Dube Sci.

11. Fungicides in plant diseases control

Nene and Thapiyal Oxford and IBH

Instructional Method:

- a) The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board may also use any of tools such as demonstration, role play, quiz, brainstorming, MOOCs *etc.*
- b) The internal evaluation will be done on the basis of continuous evaluation of students in the class-room.
- c) Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- d) Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.