**UNIVERSITY OF SARGODHA**

**DEPARTMENT OF PLANT PATHOLOGY**

COURSE OUTLINE Spring 2020

Course Title: Introductory Plant pathology

Course Code: PP-202

Credit Hours: 3(2-1)

Instructor: Dr. Yasir Iftikhar

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DESCRIPTION AND OBJECTIVES

Objectives:

To acquaint the students with basic and applied knowledge of Plant Pathology

Theory:

Better understand about the Pathological problems due to biotic and abiotic factors of the farmer’s field. Develop knowledge in identification, classification of different diseases caused by plant pathogens.

Practical:

Gain understanding of management of plant diseases prevailing in the field.

INTENDED LEARNING OUTCOMES

This course will help the students to diagnose the plant diseases on the basis of symptoms in the field.

COURSE CONTENTS

THEORY:

1. History and Importance of Plant Pathology, Symptoms of plant diseases caused by biotic and abiotic agents
2. Detailed description about introduction, economic importance, disease cycle, epidemiology and management of the Viral, Bacteril, Fungal and Nematode Diseases
3. Cotton leaf curl virus, Potato leaf roll virus, Banana bunchy top virus, Citrus tristeza virus.
4. Bacterial Diseases: Citrus canker, Citrus Greening, Bacterial blight of rice, Bacterial blight of cotton
5. Nematode Diseases: Citrus slow decline, Root-knot diseases, Cyst nematode disease
6. Diseases caused by phanerogamic parasites: Symptoms induced by Cuscuta, Mistletoe, Striga, Orobanche and their management.
7. Abiotic Diseases: Zn deficiency in rice, Tirak of cotton.
8. Fungal Diseases: Leaf spots and blast. Brown leaf spot of rice, Rice blast, Blights. Early and late blight of potato, Wither tip and anthracnose. Citrus wither tip and anthracnose of mango, vascular wilt, root rot and foot rot, Gram wilt, Gram blight
9. Rots: Red rot of sugarcane, Powdery mildews and scab: Powdery mildew of mango, Downy mildews: Downy mildew of cucurbits, White rust of crucifers, Rusts: Leaf and stripe rusts of wheat, Rust: Stem rust of wheat.
10. Smuts and Bunts: Seedling penetration types, Smuts and Bunts: Blossom and local penetration types, Tree decline: Shisham, guava and mango decline
11. Principles of Plant Disease Management

PRACTICAL:

1. Symptoms of viral diseases
2. Mosaic of tomato, cotton leaf curl virus
3. Citrus canker, Angular leaf spot (Bacterial blight) of cotton. Bacterial blight of rice, Soft rot of fruits and vegetables
4. Nematode diseases: Root knot of vegetables, ear cockle of wheat. Cyst forming nematode, citrus slow decline nematode
5. Phanerogamic parasites, Cuscuta, Mistletoe, Striga, Orobanche Abiotic diseases: Zn deficiency in rice, tirrak of cotton, deficiency of N.P.K
6. Leaf spot diseases, Peach leaf curl, apple scab
7. Powdery mildew of mango, shisham and cucurbits. Downey mildew of grapes, cucurbits and Bajra
8. Rusts. Stem rust, yellow rust and brown rust of wheat, Linseed rust. Smuts. Loose smut of wheat and Barley
9. New bunt of wheat, common smut of maize and bunt of rice. Loose smut of oat, covered smut of oat and barley
10. Old bunt of wheat. Flag smut of wheat and whip smut of sugarcane
11. Shisham decline. Guava and mango decline
12. Blight: Early and late blight of potatoes. Damping of seedling, white rust of crucifers
13. Tikka disease of groundnut, leaf spot of rice, Root rot of cotton, Rice blast, Disease management, heat and hot water treatment, seed treatment, cultural practices

READINGS

1. Agrios, G. N. 2005. Plant Pathology. 5th Edition. Academic Press Inc. New York.
2. Singh, R. S. 1998. Plant Diseases. 7th Edition. Oxford and IBH Publishing Co. New Delhi Vidhyasekram, P. 2004. Concise Encyclopedia of Plant Pathology. Food product Press and Haworth Press Inc. Binghamton, New York, USA.

COURSE SCHEDULE

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| Week | Topics and Readings | Books with Page No. |
| 1 | History and Importance of Plant Pathology, Symptoms of plant diseases caused by biotic and abiotic agents | Plant Pathology 5th Ed., (45-53) |
| 2 | *Detailed description about introduction, economic importance, disease cycle, epidemiology and management of the following plant diseases,* Viral Diseases: Cotton leaf curl virus, Potato leaf roll virus, Banana bunchy top virus | Plant Pathology 5th Ed. (724-735, 781,814) |
| 3 | Citrus tristeza virus, Bacterial Diseases: Citrus canker, Citrus Greening  Plant Pathology, 5th ed | Plant Pathology 5th Ed., (774, 667,683) |
| 4 | First Assignment Due, Bacterial blight of rice, Bacterial blight of cotton | Plant Pathology 5th Ed., (627) |
| 5 | Nematode Diseases: Citrus slow decline, Root-knot diseases | Plant Pathology by 5th Ed., (838,848) |
| 6 | Cyst nematode disease, Diseases caused by phanerogamic parasites: Symptoms induced by Cuscuta, Mistletoe, Striga, Orobanche and their management | Plant Pathology 5th Ed., (839-847) (705-715) |
| 7 | Abiotic Diseases: Zn deficiency in rice, Tirak of cotton | Fundamentals of Plant Pathology (303-306) |
| 8 | Mid Term Test |  |
| 9 | Fungal Diseases: Leaf spots and blast. Brown leaf spot of rice, Rice blast, Blights. Early and late blight of potato | Plant Pathology 5th Ed, (410-421) |
| 10 | Wither tip and anthracnose. Citrus wither tip and anthracnose of mango, Vascular wilt, root rot and foot rot. Gram wilt, Gram blight | Fundamentals of Plant Pathology (180-242) |
| 11 | Rots: Red rot of sugarcane, Powdery mildews and scab: Powdery mildew of mango | Fundamentals of Plant Pathology (180-242) |
| 12 | Downy mildews: Downy mildew of cucurbits, White rust of crucifers, Rusts: Leaf and stripe rusts of wheat | Fundamentals of Plant Pathology (180-242) |
| 13 | Rust: Stem rust of wheat, Smuts and Bunts: Seedling penetration types | Plant Pathology 5th Ed., (562-592) |
| 14 | Smuts and Bunts: Blossom and local penetration types, Tree decline: Shisham, guava and mango decline | Hand outs |
| 15 | Principles of Plant Disease Management | Plant Pathology 5th Ed., (295-345) |
| 16 | Final Examination |  |

RESEARCH PROJECT /PRACTICALS /LABS /ASSIGNMENTS

Lab assignments to the students will be assigned during the semester. Practical will be conducted during the week in respective classes according to the manual in the Department of Plant Pathology, College of Agriculture, UOS.

ASSESSMENT CRITERIA

Sessional: 20% (Participation, Presentation, Assignment)

Project: -

Presentation: -

Participation: -

Mid Exam: 30%

Final Exam (including practical): 50%