Department of Plant Pathology
Faculty of Agricultural Sciences
University of the Punjab, Lahore

Course Outline

Programme	B.Sc. (Hons.) Agriculture (Plant Pathology) 4 Year program	**Course Code**	**PP-401**	**Credit Hours**	3(2-1)
Course Title	**Diseases of Fruits & Ornamentals**				

Course Introduction

The course "Diseases of Fruits & Ornamentals" is to make students familiar with the diagnosis, identification of casual agents, and management practices of the diseases of economically important fruit and ornamental plants.

Learning Outcomes

On the completion of the course, the students will:

1. To study basic and applied aspects of economically important diseases of fruits and ornamental plants and their management.

Course Content		Assignments/Readings
Week 1	**THEORY** **Unit-I:** 1.1 Basic Plant Pathology concepts 1.2 The use of biotechnology in relation to agriculture and plant pathology **PRACTICAL** Introduction to standard techniques and instruments used in Plat Pathology laboratories	**Reading** 1. Agrios, G.N. 2005. Plant Pathology, 5th edition, Academic Press, New York, USA. 2. Lecture handouts
Week 2	**THEORY** **Unit-II:** 2.1. An overview of the major Diseases of Banana 2.2. Banana Bunchy Top Disease **PRACTICAL** Prerequisites of field visits to collect infected plant samples	**Reading** 1. Gupta, V.K. and S.K. Sharma. 2000. Diseases of Fruit Crops. Kalyani Publishers New Delhi, India. 2. Agrios, G.N. 2005. Plant Pathology, 5 th edition, Academic Press, New York, USA.
Week 3	**THEORY** **Unit-III:**	**Reading**

	3.1. Panama disease, 3.2. Sigatoka disease of banana 3.3. Banana Anthracnose 3.4. Management of Banana Diseases **PRACTICAL** Diseased plant sample collection and handling	1. Compendia of apple and pear, citrus, grapes, stone fruits and tropical fruits diseases. American Phytopathological Society, St. Paul, Minnesota, USA. 2. Machardv, W.E. 1996. Apple Scab. Biology, Epidemiology and Management. American Phytopathological Society, St. Paul, Minnesota, USA.
Week 4	**Unit-IV:** 4.1. An overview of the disease of Apple 4.2. Apple Scab 4.3 Fire Blight of apple **PRACTICAL** Diseased Plant sample collection and handling	**Reading** a. Machardv, W.E. 1996. Apple Scab. Biology, Epidemiology and Management. American Phytopathological Society, St. Paul, Minnesota, USA.
Week 5	**THEORY** **Unit-V:** 5.1. Papaya ring spot disease 5.2. Bacterial leaf spot of papaya **PRACTICAL** Preparation of artificial growth media for fungi and bacteria	**Reading** 1. Compendia of apple and pear, citrus, grapes, stone fruits and tropical fruits diseases. American Phytopathological Society, St. Paul, Minnesota, USA. 2. Lecture handouts
Week 6	**THEORY** **Quiz test** **Unit-VI:** 6.1. Soil Borne Diseases of papaya 6.2. Management Practices of papaya diseases	**Reading** 1. Pathak, V.N. 1981. Diseases of Fruit Crops. Oxford and IBH Publishing Company, New Delhi, India. 2. Lecture handouts

	PRACTICAL Isolation of Fungi from infected plant samples	**Assignment (Practical)** Diseased sample collection and preservation.
Week 7	**THEORY** **Unit-VII:** 7.1 Diseases of Guava 7.2. Management Practices of Guava Diseases **PRACTICAL** Identification and culture preservation of fungi	**Assignment (Theory):** Topics will be assigned to individual or group of students. **Reading** 1. Internet and Research Articles. 2. Lecture handouts.
Week 8	**THEORY** **Unit-VIII:** 8.1. Revision of fruit diseases 8.2. Major disease management practices **PRACTICAL** Revision of concepts of different practical	**Reading** 1. Lecture handouts
Week 9	**MID-TERM**	
Week 10	**THEORY** **Unit-IX:** 9.1. Major Diseases of Manog 9.2. Mango anthracnose, Mango decline **PRACTICAL** Isolation and maintenance of bacterial pathogens from infected plant samples	**Reading** 1. Singh, R.S. 2001. Diseases of Fruit Crops. Science Publ. Inc. **Assignment (Theory):** Topics will be assigned to individual or groups.
Week 11	**THEORY** **Unit-X:** 10.1 Stem end rot of mango 10.2 Powdery mildew of mango 10.3 Management Practices of Mango Diseases **PRACTICAL** Preparation and application of inoculum of fungal and bacterial plant pathogen	**Reading** 1. Ploetz, R.C. 2003. Diseases of Tropical Fruit Crops. CABI – UK.

Week 12	**Unit-XI:** 11.1. Disease of Citrus Fruit 11.2. Citrus canker, Citrus greening, Citrus wither tip **PRACTICAL** *In-vitro* analysis of fungicide efficacy against a fungal pathogen	
Week 13	**THEORY** **Group Discussion** **Unit XII:** 12.1. Citrus tristeza disease 12.2. Citrus Decline **PRACTICAL** Antagonistic dual culture analysis	**Reading** 1. Compendia of apple and pear, citrus, grapes, stone fruits and tropical fruits diseases. American Phytopathological Society, St. Paul, Minnesota, USA. 2. Lecture handouts **Project (Practical)** Isolation and purification of pathogens.
Week 14	**REVISION/TEST** **THEORY** **Group Discussion/ class presentations** **PRACTICAL** Demonstration of post-harvest disease	
Week 15	**THEORY** **Unit XIII:** 13.1. Postharvest Diseases of Fruits 13.2. Management Practices of Post Harvest Diseases **PRACTICAL** Field visit	**Reading** 1. Leslie, A.R. 1994. Handbook of Integrated Pest Management for Fruit and Ornamentals. CRC Press, London.
Week 16	**THEORY** **Unit XIV:** 14.1 Important Diseases of Ornamental Plants **PRACTICAL** Revision	**Reading** 1. Chase, A.R. 1987. Compendium of foliage ornamental plant diseases. APS USA. 2. Leslie, A.R. 1994. Handbook of Integrated Pest Management for Fruit and Ornamentals. CRC Press, London
	FINAL-TERM	
Textbooks and Reading Material		

Suggested Readings

BOOKS

1. Chase, A.R. 1987. Compendium of foliage ornamental plant diseases. APS USA.
2. Compendia of apple and pear, citrus, grapes, stone fruits and tropical fruits diseases. American Phytopathological Society, St. Paul, Minnesota, USA.
3. Compendium of ornamental plants, Foliage plant diseases, 1988. American Phytopathological Society, St. Paul, Minnesota, USA.
4. Gupta, V.K. and S.K. Sharma. 2000. Diseases of Fruit Crops. Kalyani Publishers New Delhi, India
5. Leslie, A.R. 1994. Handbook of Integrated Pest Management for Fruit and Ornamentals. CRC Press, London.
6. Machardv, W.E. 1996. Apple Scab. Biology, Epidemiology and Management. American Phytopathological Society, St. Paul, Minnesota, USA.
7. Pathak, V.N. 1981. Diseases of Fruit Crops. Oxford and IBH Publishing Company, New Delhi, India.
8. Ploetz, R.C. 2003. Diseases of Tropical Fruit Crops. CABI – UK.
9. Reddy, P.P. 2010. Bacterial and Viral Diseases and their Management in Horticultural Crops. Scientific Pub. 288 p.
10. Singh, R.S. 2001. Diseases of Fruit Crops. Science Publ. Inc.
11. Stefrud, A. 2005. Diseases of Fruits and Nuts. Biotech Book, Delhi.

Journal Articles/ Reports

Resources will be shared during class

Teaching Learning Strategies

1. Class lectures
2. Discussions
3. Practical demonstrations
4. Hands on training where applicable

Assignments: Types and Number with Calendar

Assignments

Types and Number with calendar

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.

3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.