**The University of Jordan**

**Faculty of Agriculture Department of Plant Protection**

**Program: Master in Plant Protection Academic Year: 2104-2015/ First Semester**

**Diagnoses of Plant Diseases (0606722)**

**-----------------------------------------------------------------------------------------------------------**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Credit hours** | **3** | **Level** | **Master** | **Pre-requisite** | **0606222** |
| **Coordinator/ Lecturer** | **Prof. Hifzi Abu - Blan** | **Office number** | **226** | **Office phone** | **22520** |
| **E-mail** | **hifzi@ju.edu.jo** | **Course website** | **-** | **Place** |  |

|  |
| --- |
| **Office hours** |
| **Day/Time** | **Sunday** | **Monday** | **Tuesday** | **Wednesday** | **Thursday** |
|  | **In Jordan Valley** | **8 - 4** | **8 – 4** | **8 - 4** | **8 - 4** |

**Course Description**

Identification of plant diseases caused by various agents (fungi, bacteria, viruses and nematode's..etc.) in the field and laboratory. It's also includes diagnostic by symptoms of diseases and study of host pathogen-environment relationship.

**Learning Objectives**

The major objective of this module is to provide students with identification of plant diseases found in different locations of Jordan and caused by various agents (Fungi, bacteria, viruses and nematodes …. etc. ) in the field and in laboratory. It also includes diagnosis of symptoms of disease through field trips and study host pathogen-environment relationships with their use in disease identification.

**Intended Learning Outcomes (ILOs):**

Successful completion of the course should lead to the following outcomes:

**A. Knowledge and Understanding:** Student is expected to

A1- Be able to differentiate between healthy and diseased plants, symptoms vs signs and

 specimen preparation.

A2- Be able to diagnose the symptoms of diseases under field conditions.

**B. Intellectual Analytical and Cognitive Skills:** Student is expected to

B1- Practice Koch's postulates and isolation techniques (Aseptic techniques, sterilization,

 disinfection, media preparation, isolation and inoculations).

B2- Know the different techniques used to diagnose diseases in the laboratory.

**C. Subject- Specific Skills:** Students is expected to

C1- Use the microscope to test disease signs.

C2- Draw the symptoms and causal agents in his note book.

**D. Transferable Key Skills:** Students is expected to

D1- Collect specimens preserve or dry them and keep on drawing papers to submit at the end of

 semester.

D2- Sterilize small infected parts isolate and culture on media.

D3- Test isolated causal agents and mount them on slides through temporary or permanent media.

# ILOs: Learning and Evaluation Methods

|  |  |  |
| --- | --- | --- |
| **ILO/s** | **Learning Methods** | **Evaluation Methods** |
| **A, B, C, D.** | **Lectures and Discussions, Homework and Assignments, Projects, Presentation, …** | **Exam, Quiz, presentation, project, assignments, ..** |

**Course Contents**

|  |  |  |  |
| --- | --- | --- | --- |
| Content | Reference  | Week | ILO/s |
|  Introduction: Related disciplines, course concept.  | 1, 3 | W1 | A1 |
| Field trip to diagnose and collect diseases of cucurbits crops | 1, 2, 3, 4, 6 | W2 | A2, D1 |
|  Identification of cucurbit diseases in the laboratory. | 1, 2, 3, 4, 6 | W3 | B1, B2, C1, C2, D2, D3 |
| Field trip to diagnose and collect diseases of solanaceous crops  | 1, 3, 4, 6 | W4 | A2, D1 |
| Identification of solanaceous diseases in the laboratory. | 1, 3, 4, 6 | W5 | B1, B2, C1, C2, D2, D3 |
|  Field trip to diagnose and collect diseases of Legumes. | 1, 7 | W6 | A2, D1 |
|  Identifications of Legumes diseases. | 1, 7 | W7 | B1, B2, C1, C2, D2, D3 |
| Field trip to diagnose and collect diseases of crucifer crops. | 1, 2, 4 | W8 | A2, D1 |
| Identification of crucifer diseases in the laboratory. | 1, 2, 4 | W9 | B1, B2, C1, C2, D2, D3 |
| Field trip to diagnose and collect diseases of field crops. | 1, 7 | W10 | A2, D1 |
| Identification of field crop diseases.  | 1, 7 | W11 | B1, B2, C1, C2, D2, D3 |
| Field trip to diagnose and collect diseases of grape vine and olive trees. | 1, 5 | W12 | A2, D1 |
| Identification of grape vine and olive tree diseases. | 1, 5 | W13 | B1, B2, C1, C2, D2, D3 |
| Field trip to diagnose and collect diseases of citrus trees. | 1, 2, 5 | W14 | A2, D1 |
| Identification of citrus tree diseases. | 1, 2, 5 | W15 | B1, B2, C1, C2, D2, D3 |
|  Field trip to diagnose and collect diseases of stone fruit trees. | 1, 2, 5 | W16 | A2, D1 |

**Learning Methodology**

A – Duration of the course: 16 weeks in the semester. It is a laboratory course, involving a minimum of six hours of work a week. Work in the laboratory will be supplemented by outside reading, greenhouse work, and field collection of specimens by each individual student. Since the diseases studied will depend to some extent on those available during the spring semester, no list of specific diseases that will be covered is included here.

Each student is expected to collect specimens of as many diseases as he can and to keep a record of the specimens collected. These will be shared in the laboratory with other students. Each student is expected to diagnose not only his own collections but as many other specimens brought into the laboratory as he can.

Students are to keep note book and record therein as much information about each specimen as they can obtain. Pages 3.7 and 3.8 in Streets book, The diagnosis of plant diseases are to be used as a guide for the information needed.

B -Teaching tools include samples of infected plants, mounting causal agents of diseases on glass slides, projection slides and note book.

## Projects and Assignments

One assignment for each student during the course.

# Evaluation

|  |  |  |
| --- | --- | --- |
| **Evaluation** | **Point %** | **Date** |
| **Midterm Exam**  | 15 | The 8th week |
| **Project (Drawings)** | 5 | During the course  |
| **Assignments** | 10 | Each two weeks |
| **First laboratory exam**  | 20 | The 8th week |
| **Final laboratory exam** | 20 | One week before theoretical final exam |
| **Final Exam**  | 30 | University Schedule |

**Main Reference/s:**

1. Streets, R.B. (1992) The Diagnosis of Plant Diseases. 6thedition.University of Arizona Press.Tucson,USA, 581 pages
2. Agrios, G.N. (1997) Plant Pathology. 4th Edition, Academic Press, London, 656 pages.
3. Abu-Blan, H.A. (1995) Diseases of Protected Plants and their control. Al-Dostoor 4. Press, Amman, 216 Pages.
4. Dixon, G.R. (1984) Vegetable Crop Diseases. Macmillen-publisher Ltd., London. 404 pages.
5. Jones, A.L.and Sutton, T.B. (1996) Diseases of Tree Fruits in the East. North Carolina State University, USA . 95 pages.
6. Lelliotte, R.A. (1987) Methods for the diagnosis of Bacterial Diseases of Plants. Black well Scientific Publication.
7. Martens, J.W., Seaman, W. I. and Atkinson, T.G. (1984) Diseases of Field Crops : An illustrated compendium. The Canadian Phytopathological Society. Ontario, Canada.

**Intended Grading Scale (Optional)**

40-69 **C**

70-74 **C+**

75-79 **B**-

80-84 **B**

85-89 **B+**

90-94 **A**-

95-100 **A**

**Notes:**

* Concerns or complaints should be expressed in the first instance to the module lecturer; if no resolution is forthcoming, then the issue should be brought to the attention of the module coordinator (for multiple sections) who will take the concerns to the module representative meeting. Thereafter, problems are dealt with by the Department Chair and if still unresolved the Dean and then ultimately the Vice President. For final complaints, there will be a committee to review grading the final exam.
* For more details on University regulations please visit:

 <http://www.ju.edu.jo/rules/index.htm>