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**Department of Plant Protection**

**College of Agricultural Engineering Sciences University of Salahaddin**

**Subject: Principles of Plant Protection**

**Course Book – (1st  class)**

**Theory Lecturer's name:**

**Dr. Pshtiwan Abdullah Jalil,**

**Dr. Majid Hassan Mustafa**

**Practical Lecturer's name: Mr. Muhammad Jamal & Waran Nuraddin**

**Academic Year: 2023/2024**

**Course Book**

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| **1. Course name** | **Principles of Plant Protection** | |
| **2. Lecturer in charge** | **Theory lecturers name: Pshtiwan Abdullah Jalil, PhDMajid Hassan Mustafa, PhD.**  **Practical Lecturer's name: Mr. Muhammad Jamal** | |
| **3. Department/ College** | **Plant Protection Dept./Agricultural Engineering Sciences College.** | |
| **4. Contact** | **e-mail:** [**Pshtiwan.jalil@su.edu.krd**](mailto:Pshtiwan.jalil@su.edu.krd)  **majid.mustafa@su.edu.krd**  [**mohammed.kapkapci@su.edu.krd**](mailto:mohammed.kapkapci@su.edu.krd)  **Tel:**  **0750 4823304**  **0750 4439693** | |
| **5. Time (in hours) per week** | **Theory: 2**  **Practical: 2** | |
| **6. Office hours** | **8:30 – 2:00 from Sunday to Thursday** | |
| **7. Course code** |  | |
| **8. Teacher's academic profile** | **Majid Hassan Mustafa**:  Doctor of philosophy (PhD) in Disease resistance, graduated in Milan university, Italy, 2022. My thesis title was “Brown Rot disease development in peach *P. persica* L. Batsch): from fungal biology to high throughput on field phenotyping”. I obtained my Master of Science in Integrated pest management (IPM) of Mediterranean fruit, in Istituto Agronomico Mediterraneo di Bari (IAMB), Italy, 2015. Thesis title “Investigation into Auchenorrhyncha species, putative vectors of "Bois noir" and "Flavescence dorée", in Apulian vineyards using different molecular techniques”. My bachelor’s degree (BSc) in Plant Protection, University of Salahaddin-Erbil, Iraq, 2010.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  **Mr. Muhammad Jamal :** | |
| **9. Keywords** | **Principles of Plant Protection, Plant diseases, Disease management.** | |
| **10. Course overview:**  The "Principles of Plant Protection: Plant Pathology" course provides an essential foundation in understanding and managing plant diseases. Students will delve into the basics of plant pathology, including the identification and mechanisms of plant diseases, and learn to utilize laboratory equipment such as microscopes for disease diagnosis. The course covers crucial techniques for plant disease sampling and the isolation of plant pathogens, equipping students with practical skills for accurate identification and management. Weekly laboratory sessions reinforce theoretical knowledge through hands-on experience with microscopic techniques, pathogen isolation, and disease diagnosis. Additionally, students will explore integrated disease management strategies and apply their learning to real-world case studies. | | |
| **11. Course objective:**  The course aims to provide students with a comprehensive understanding of the basic concepts and significance of plant pathology, enabling them to identify various plant diseases and their causal agents. Students will learn to utilize laboratory equipment and microscopy for accurate plant disease diagnosis, as well as perform plant disease sampling and isolation of plant pathogens. Additionally, the course will develop students' skills in analyzing and managing plant diseases effectively. | | |
| **12. Student's obligation**  Students are expected to attend all lectures and laboratory sessions, actively participate in class discussions, and complete all assigned readings and coursework on time. They must conduct laboratory experiments safely and responsibly, maintain accurate lab records, and submit detailed laboratory reports. Regular quizzes and exams will assess their understanding of theoretical concepts, while a final project involving a comprehensive case study analysis and presentation will demonstrate their practical skills. Students are also required to engage in group activities and contribute to collaborative projects, ensuring a thorough grasp of integrated disease management strategies. | | |
| **13. Forms of teaching**  Effective teaching is essential for providing students with a well-rounded and interesting education. To give students with a well-rounded learning experience, we will use the following teaching methods in our classes:  1- PowerPoint presentations: To offer a summary of each course, we will utilize data show presentations in the form of PowerPoint slides. The lecturer will give extra in-depth information through narration, while the slides will define the process of each lesson.  2- Using a whiteboard: A white board is also necessary for teaching and explaining different topics.  3- Laboratory sessions: For the practical portion, we will have laboratory sessions in the Department of Plant Protection's plant pathology laboratory. Through this hands-on method, students allowed to gain a thorough understanding of the material, providing a useful and interactive learning experience.  4- Field visits: to forests, parks (i.e., GirdaRasha). | | |
| **14. Assessment scheme**  Students must pass four tests, two of which are theoretical and two of which are practical. The writing examination is worth 100 points, including 65% for theoretical tests and 35% for practical assessments. The theoretical tests consist of a 15% monthly exam and a 50% final exam. The practical section is divided into two monthly examinations of 15% each, and daily quizzes and interactions with laboratory tasks for 5%. | | |
| **15. Student learning outcome:**  By the end of this course students should be able to:   * Explain the basic principles and significance of plant pathology. * Identify and describe various plant diseases and their causal agents. * Utilize laboratory equipment and microscopy techniques for diagnosing plant diseases. * Perform effective plant disease sampling and isolate plant pathogens accurately. * Analyze plant disease data and develop appropriate management strategies. * Apply integrated disease management practices in real-world agricultural settings. | | |
| **16. Course Reading List and References‌:**  ▪ Key references:   1. **Introduction to Plant Pathology** by Richard N. Strange 2. **Plant Pathology: Concepts and Laboratory Exercises** by Bonnie H. Ownley and Robert N. Trigiano 3. **Plant Disease: A Threat to Global Food Security** edited by Peter Scott, Thomas K. Gottwald, and Barry E. Slusarenko 4. **Compendium of Plant Disease Series** by The American Phytopathological Society (APS) 5. **The Fungal Community: Its Organization and Role in the Ecosystem** edited by John Dighton, James F. White Jr., and Peter Oudemans 6. **Plant Pathogenesis and Disease Control** edited by Hachiro Oku 7. FAO, 2009. Global review of forest pests and diseases. Management 2, 222. 8. Gonthier, P., Nicolotti, G., 2013. Infectious forest diseases, Infectious Forest Diseases. https://doi.org/10.1079/9781780640402.0000 9. Gregory, S.C., Redfern, D.B., 1998. Disease and Disorders of Forest Trees. Nature 136. 10. Horst, R.K., 2013. Field manual of diseases on trees and shrubs, Choice Reviews Online. https://doi.org/10.5860/choice.51-1234 11. Melissa Koch - Forest Talk, 2019. Do Trees Communicate? 12. Morowitz, H.J., 1982. Trees and forests. Hosp. Pract. (Off. Ed). 17, 24–25. https://doi.org/10.1080/21548331.1982.11702360 13. Mota, M.M., Vieira, P., 2008. Pine Wilt Disease: A Worldwide Threat to Forest Ecosystems. 14. Paine, T.D., Lieutier, F., 2016. Insects and diseases of mediterranean forest systems, Insects and Diseases of Mediterranean Forest Systems. https://doi.org/10.1007/978-3-319-24744-1 15. Parthasarathy, S., Thiribhuvanamala, G., Muthulakshmi, P., Angappan, K., 2021. Diseases of Forest Trees and their Management, Diseases of Forest Trees and their Management. CRC Press. https://doi.org/10.1201/9781003173861 16. Phillips, D. H., Burdekin, D.A., 1992. Diseases Of Forest And Ornamental Trees. 17. Phillips, D.H., Burdekin, D.A., 1982. Diseases Of Forest And Ornamental Trees, Suparyanto Dan Rosad (2015. 18. Roy, S., Banerjee, D., 2018. Diversity Of Endophytes In Tropical Forests. https://doi.org/10.1007/978-3-319-89833-9\_3 19. Schueffler, A., Anke, T., 2011. Endophytes of Forest Trees: Biology and Applications, Endophytes of Forest Trees: Biology and Applications. 20. Tattar, T.A., 1978. Diseases of Shade Trees, Diseases of Shade Trees. https://doi.org/10.1016/c2013-0-11586-3 | | |
| **17. The Theoretical Topics:** | | **Lecturer's name** |
| **Lecture 1: Introduction of the principles of Plant Protection.**  **Lecture 2: Objectives and Functions of Plant Protection.**  **Lecture 3: Agricultural pests and their classification**  **Lecture 4: Determining and diagnosing Plant infections by diseaseand insect pests.**  **Lecture 5: The Characteristics of Insects and their Classification.**  **Lecture 6: Insect Damage**  **Lecture 7: Methods of management and control of insect problems**  ***Field visit to a natural forest***  **Lecture 8: Introduction to Plant Pathology**  **Lecture 9: Types and Symptoms of Plant Diseases**  **Lecture 10: Laboratory Equipment and Safety Protocols**  **Lecture 11: Microscopic Techniques for Plant Disease Diagnosis**  **Lecture 12: Methods for Plant Disease Sampling and Pathogen Isolation**  ***Second Exam*** | | Majid Hassan Mustafa (2 hrs each) |
| 1. **Examinations:** 2. **Definitions**, such as: Plant Pathology, Parasite, Biotrophs, Saprophytes 3. **Explanations**, such as:   What are the main impacts (Damages) of plant Diseases?  What are the three stages of dampingoff?  What are the most common root symptoms?  What does the term "chemical injury" in plant disease mean?   1. **Filling blank**    1. There are three main ways that fungi can penetrate or enter the plants 1. ………….., 2.…………. and 3…………..    2. ……………. is a deterioration of the normal state of a plant that interrupts or modifies its vital functions.    3. Disease Infection of roots may cause roots to rot and this leads to ……………. 2. **Drawing** such as:    1. Draw a typical disease cycle of a plant leaf disease.    2. Draw a typical disease cycle of anthracnose disease. | | |
| **20. Extra notes:**   * When an exam postponed by a student, whatever be the reason, he/she has to do the exam within one week. It is the student's responsibility to contact the lecturer with the frame time to rearrange for an alternative exam. Failure to do so in a timely fashion may result in a zero grade for the missed exam. * Students are requested to attend practical courses with lab coats. | | |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**  I thereby approve that the course is comprehensive and cover all aspects of the course. The subjects are arranged sequentially that enable the students to learn gradually step by step.  Name:  Degree:  Specialty:  Signed:  Date: | | |