Department of Plant Protection

College of Agriculture

University of Salahaddin

Subject: Advanced Mycology

Course Book – (MSc. And PhD students)

Lecturer's name: Qasim Marzani, PhD

Academic Year: 2020/2021

Course Book

1. Course name	**Advanced Mycology**
2. Lecturers in charge	**Dr. Qasim Marzani**
3. Department/ College	**Plant Protection/ College of Agriculture**
4. Contact	**Dr. Qasim: e-mail: Qasim.marzani@su.edu.krd** **Tel: 07504668898**
5. Time (in hours) per week	**Theory: 2** **Practical: 3**
6. Office hours	**Sunday to Thursday**
7. Course code	
8. Teacher's academic profile	Doctor of Philosophy in Plant Pathology, graduated in the University of Nottingham, England, United Kingdom, 2007 - 2011. Thesis title: Fungicide Resistance And Efficacy for Control Of *Pyrenophora teres* And *Mycosphaerella graminicola* on Barley and Wheat. Supervised by: Dr. Stephen Rossall. My Master is on plant pathology, Salahaddin University, Erbil, Southern Region of Kurdistan, 2000—2003. Thesis title: Epiphytotic and control of chickpea blight caused by *Ascochyta rabiei* in Erbil province. Supervised by assistant professor Yaqoub Issac Elia. My Bachelor degree is on Agricultural Sciences – Plant Protection, University of Baghdad, Baghdad, Iraq, 1983 – 1990.
9. Keywords	

10. Course overview:

This course will give a comprehensive introduction to fungi in terms of their biology, physiology, genetics, biotechnological potential and pathogenity. This course will deal with an in-depth description of the biology, structure and physiology of fungi in which the structure, metabolism and growth of fungi will be introduced. Moreover, the genetics and life cycles of a number of representative fungi are described and the use of fungi for genetic analysis is outlined. During this course we will describe how technologies have increased our knowledge of fungi and made available new opportunities for exploiting fungi for the good of humanity.

12. Student's obligation

Lectures are the most common method of teaching. It is most important for students to ensure that have a set of good clear notes based on the lectures and student's own reading. Students have to attend every single lecture on time. They are responsible for all explanations and details that will be given by the lecturer and he/she has to write down them in their notebooks. Referring to text books is also required in order to have more details about any subject. Based on time schedule, assignments related to the module, will also be given to the students.

13. Forms of teaching

Use of data show by preparing PowerPoint presentations in which the outlines of each lecture will be shown but the details of the lecture will be narrated by the lecturer himself. The white board is also required for many explanations and illustrations. In some cases, samples will be shown to students to have a close and real idea on the subject. The concentration will be on student-centred learning method instead of lecturer-cantered one.

14. Assessment scheme

Students are evaluated during the semester by preparing an article review on a specific subject related to the module. At the end of the programme, there is a final exam will be taken from all lectures.

15. Course objective

This course will introduce information about the fungal population's diversity and speciation. This course will give an overview of how fungi are acting in the field of plant pathology in particular and how they utilized for producing antibiotics, enzymes and a range of chemical products. Introducing different fungal interactions with other organisms will be introduced. Description of plant pathogenic fungi and the human diseases caused by fungi will be studied. Plants and the impact of such pathogens on the global supply of food will be discussed.

16. Student learning outcome:

Expected outcomes may include:

1. To understand the definition, characterization and classification of fungi.
2. To study the features and growth of hyphae and mycelia formation.
3. To know the fungi cell wall composition, structure and formation.
4. To understand the fungal physiology in respect to nutrition, cellular biosynthesis, metabolism, growth and reproduction and understanding the fungal adaptations.
5. To understand the fungal genetics and populations.
6. To know the antibiotics, enzymes and chemical commodities production from fungi.
7. To understand biotechnological exploitation in fungi.
8. To understand the interactions of fungi with other organisms as symbiotic partners, plant pathogens and causing human diseases.
9. Possess significant knowledge of the principles and methods of fungal systematics
10. Recognize the most important fungal groups and their phylogenetic relationships
11. Understand how to use fungal scientific names correctly
12. Apply your knowledge of fungal characters to effectively identify unknown fungi to family, genus and species

16. Course Reading List and References:

Recommended books will be identified at the start of teaching

- Key references:
  1- The fifth Kingdom, by Bryce Kendrick, fourth edition, 2017.
  2- Introduction to fungi, by John Webster, 2007.

- Useful references:
  1- Introductory Mycology, by C.J. Alexopoulos, 1996.
  2- Pictorial Atlas of Soil and Seed Fungi, Third Edition, by Tsuneo Watanabe, 2010.
  3- Pictorial Atlas of Soilborne Fungal Plant Pathogens, by Tsuneo Watanabe, 2018.

17. The Topics:	**Lecturer's name**
1- An introduction: Diversity of fungi 2- Fungal structures and propagules 3- Identification of fungi - Materials and methodology 4- Physiology of fungi and adaptation 5- Fungal Cell Biology and Development 6- Nutrition behaviour of fungi 7- Fungal systematics 8- Mycotoxigenic fungi 9- Entomopathogenic fungi 10- Plant-fungal interactions 11- Primary and Secondary Metabolites of Fungi 12- Fungal Symbiosis concept 13- Plant pathogenic fungi 14- Endophytic fungi 15- Fungi and environment 16- Survival of fungi 17- Genetics of fungi: variations, sexuality and evolution 18- Spore production: discharge and dispersal	Dr. Qasim Marzani
18. Practical Topics (If there is any)	
1- Fungal colonies and fungal structures **2-** Fungal propagules **3-** Identification of fungi - Materials and methodology **4-** Isolation of different fungi in different habitats **5-** Techniques in obtaining pure cultures **6-** Single spore isolates **7-** Mounting and preservation of cultures **8-** Mycological Growth and Propagation **9-** Counting-enumeration **10-** Measuring of fungi **11-** Steps of identification	Dr. Qasim Marzani

19. Peer review **پێداچوونەوەی هاوەڵ**

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:

Speciality:

Signed:

Date: