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**Department of …Biology…………………….**

**College of ……Science………………………….**

**University of …Salahaddin**

**Subject: …General Mycology**

**Course Book – Third Class**

**Lecturer's name:**

**Assist.Prof. Fareed Matti Toma M.Sc. (Theory)**

**Assist.Prof. Dr. Nareen Qadr FaqeAbdulla (Practical)**

**Academic Year: 2023/2024**

**Theory Course Book**

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| **1. Course name** | **General Mycology** |
| **2. Lecturer in charge** | **MSc.Fareed Matti Toma** |
| **3. Department/ College** | **Biology \ Science** |
| **4. Contact** | **e-mail:** **fareed.toma@su.edu.krd****Tel: (optional)** |
| **5. Time (in hours) per week**  | **Theory: 2** **Practical: 3 \*2**  |
| **6. Office hours** | **Availability of the lecturer to the student during the week** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | **I graduate from Mousal University in 1979 -1980 worked as teacher in high school for six years, in 1988 get my M.Sc. degree in phytopathology (Mycology) between 1989 -1992work as teacher in Central instructor institute, in September 1992 worked as assistant lecture in Biological Department for seven years start as Assistant Lecturer Teaching Practical plant disease, Practical Virology, Practical Mycology, and Practical Microbial physiology. For 10 years I worked as a Member of the Examination Committee of College of Science. In 1999 had promoted to lecturer. In 2001-2015 lam teaching General Mycology theory for third class and general Biology for first class Geological Department. Supervising Mycology and General Biology Practical Laboratory, Teaching Advanced Mycology for postgraduate student, in2009 -2015 I am Teaching Scientific Debate to first class of Biological Department. In2007, I had promoted to assistant prof. (2008- 2013) lam supervising** **Four theses, l have seventeen papers publish in local and international journals**  |
| **9. Keywords** | Importance of fungi, fine structure of fungal cell, sexual and asexual reproduction, somatic structure bodies, fungal systematic, Life cycle of fungi, biological control, Basidiomycota, mycelium, conidia, spores, budding, zygote, clamp connection and *Pencillium* spp. |
| **10. Course overview:** This course deal with the principle concepts of General Mycology, lam teaching the student about characteristics of fungi, level of organization of fungal cell, Biological molecules, teaching about type of reproduction and sexual and asexual fruiting body, explain fungal cell structure and their functions, lam teaching the features of lower fungi and higher fungi, explanation the structure and functions of cell wall, plasma membrane and also including the most important of organelles. Of course, talking about the classification of fungi and general characteristic of each phylum and explain the life cycle of fungi for each fungus. |
| **11. Course objective:*** **Definition of Mycology, how Mycology begins in past dim, founder of Mycology, exact definition of fungi**
* **Importance of fungi to human**
* **General characteristic of fungi, type of mycelium, type of septum and their functions, fine structure of fungal cell wall.**
* **Tip growth of fungal hypha, fine structure of fungal cell. Nucleus, pulse field gel electrophoreses, techniques, cell fungal organelles**
* **some vegetable structures, stroma, haustorium, appressorium, sclerotium, biotrophs, homothallic fungi, heterothallic fungi**
* **Physical and chemical factors affected on fungi growth, light, temperatures, moistures, carbon and nitrogen sours, and micro and macro element.**
* **Sexual and asexual reproduction of fungi**
* **first examination**
* **Fungal systematic, phylogenetic classification, pyretic group, species concepts, number of fungi, characters, fossil fungi.**
* **Kingdom of Fungi, phyla of Fungi.**
* **General characteristic of Chytridiomycota, explanation life cycle of some genera belongs to chytrids.**
* **General characteristics of Zygomycota phylum, explanation of some genera belong to this phylum**
* **General characteristic of Ascomycota phylum, some species of Ascomycetes.**
* **-General characteristic of Basidiomycota phylum, explanation of some important genera.**
* **Fifteenth week / Second examination.**
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| **12. Student's obligation****\*Exam policy: Student Should take 2 exams during the course There will be no make-up exams for absences students without medical report.** **\*Classroom polices:** **1- Attendance: You are strongly encouraged to attend class on a regular basis, as participation is important to your understanding of the material. This is your opportunity to ask questions. You are responsible for obtaining any information you miss due to absence** **2- Lateness: Lateness to class is disruptive****3- Electronic devices: All cell phones are to be turned off at the beginning of class and put away during the entire class.****4-Talking: During class, please refrain from side conversations. These can be disruptive to your fellow students and your professor** **5- No Disrespectful to both the professor and to your fellow students.**  |
| **13. Forms of teaching:** **White board and, power point.** |
| **14. Assessment scheme****that the final grade will be based upon the following criteria:** **Final Practical Examination: 35** **Theory examination: 15****Final examination theory: 50****------------------------------------------------------------*** **Total 100**
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| **Theory** | **quiz**  | **report and homework** |  |  **total** |
| **10** | **2** | **3** |  | **15** |
| **15. Student learning outcome:**After completion of this course, you will be able to: Define common terms used in Mycology and the history of Mycology* Properties of life cycle of fungi.
* Importance of Fungi to human and environments.
* Characteristic of fungi Fine structure of cell wall and organelle of fungal cell.
* Systematic fungi and the evolution of fungi and the role of fossil in this field
* Sexual and asexual reproduction of fungi and explain the sexual and asexual fruiting bodies.
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| **16. Course Reading List and References‌:**▪**References** **1-** **Alexopouloss, C.J., Mims, C.W. and Blackwell. (1996). Introductory Mycology.** **2Vashishta, B.R., and A.K. Sinha, (2007) Botany for degree students’ fungi.** **3-Solomon, Eldra P., Linda R.Berg, and Diana W.Martin (2008) Biology, 8th edition.**  **4-John Webster and Roland Weber, (2007) Introduction to Fungi. 3rd Edition.** |
| **17. The Topics:** | **Lecturer's name** |
| * **First week** \ Definition of Mycology, how Mycology begins in past dim, founder of Mycology, exact definition of fungi
* **Second week and Third week** / Importance of fungi to human
* **Fourth week** / General characteristic of fungi, type of mycelium, type of septum and their functions, fine structure of fungal cell wall.
* **Fifth week** / Tip growth of fungal hypha, fine structure of fungal cell. Nucleus, pulse field gel electrophoreses, **Sixth week** / some vegetable structures, stroma, haustorium, appressorium, sclerotium, biotrophs, homothallic fungi, heterothallic fungi
* **Seventh week** / Physical and chemical factors affected on fungi growth, light, temperatures, moistures, carbon and nitrogen sours, and micro and macro element.
* **Eighth week** / Sexual and asexual reproduction of fungi
* **Ninth week / first examination**
* **Tenth week** / Fungal systematic, phylogenetic classification, pyretic group, species concepts, number of fungi, characters, fossil fungi.
* **Eleventh week** / Kingdom of Fungi, phyla of Fungi.
* General characteristic of Chytridiomycota, explanation life cycle of some genera belongs to chytrids.
* techniques, cell fungal organelles
* **Twelfth week** / General characteristics of Zygomycota phylum, explanation of some genera belong to this phylum
* **Thirteenth week** / General characteristic of Ascomycota phylum, some species of Ascomycetes.
* **Fourteenth week** / -General characteristic of Basidiomycota phylum, explanation of some important genera.
* **Fifteenth week / Second examination.**
 | Lecturer's nameex: (2 hrs)ex: second course |
| **18. Practical Topics (If there is any)** |  |
| In this section the lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture  | Lecturer's name3\*2 |
| * **19. Examinations: *1. Compositional:* In this type of exam the questions usually start with Explain how, what are the reasons for…? Why…? How….? Some examples as following**
* Explain how Fungi are more closely related to animals than the plants:
* Mention the role of macro vesicles in tip growth of hypha.
* Individual yeast cells are not capable of unlimited budding. Why? Explain.
* ***2. True or false type of exams:***
* **In this type of exam, a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence.**
* **(Examples should be provided)**
* ***3. Multiple choices:***
* **In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. (Examples should be provided).**

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| **20. Extra notes:**Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  |

**Practical Mycology Course Book**

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| **1. Course name** | **Practical Medical Mycology** |
| **2. Lecturer in charge** | **Nareen Qadr FaqeAbdulla** |
| **3. Department/ College** | **Biology/Science** |
| **4. Contact** | **e-mail: nareen.faqi@su.edu.krd** |
| **5. Time (in hours) per week**  | **Practical: 2 hours (3 groups) = 6 hours**  |
| **6. Office hours** | **Availability of the lecturer to the student during the week** |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | * **I graduate from Salahaddin University in 2003 (Ranked 8th in Department) worked as assistant biology for four years and assist in practical mycology lab., practical plant disease lab, practical General plant lab., practical ecology lab. and practical pollution lab. In 2010 I finished my MSc degree and start as Assistant Lecturer Teaching Practical mycology, Practical microbial physiology, Practical ecology, Practical pollution, and Practical general plant**
* **For 5 years (Between 2011-2014) I worked as a member of the safety ………for College of Science.**
* **In 2013 I got my lecturer degree**
* **In 2019 I got my Assist.Prof. degree**
* **In 2022 I finished my PhD. degree**
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| **9. Keywords** | **Microorganisms, Structure, Factors affecting microbial growth and Infection**  |
| **10. Course overview:** * ***The importance of studying the subject***

The course will cover fungal groups of mycolgy topics together with printed media and internet articles which deal with current fungal life cycle issues. Instructional stratigies attemp to strike a balance between developing the students ability to cope with fungal identification, extending their general academic reading skills, and increasing their basic knowledge of and understanding of mycology. The course will give students a better understanding of a number of fungal characteristics topics, the followings are examples but not restricted to: growth, Reproduction, Life cycles, Forms of fungi, Morphological appearace, Isolation and Identification of fungi* ***Understanding of the fundamental concepts of the course***

Today fungal science is a fusion of the traditional components with the modern aspects of biochemistry, molecular biology and biotechnology. Over the years, Fungi has shown enormous gain in information and applications owing to tremendous inputs from research in all its aspects. With global recognition of the need for conservation, field fungal biologists have contributed significantly in assessing fungal diversity. Taxonomists have explored newer dimensions for the classification of fungi. New insights have been gained in functional and structural aspects of plant development by utilizing novel tools and techniques for fungal research. Challenging areas of teaching and research have emerged in ecology and reproductive biology. These courses shall provide the biology students hands on experience and professional inputs. On the whole, the curriculum is a source of lot of information and is supported by rich resource materials. It is hoped that a student graduating in biology with the new curriculum will be a complete mycology at Honours level. * ***Principles and theories of the course***

The principles and theories of the subject are the teaching of General characteristics; Ecology and distribution; range of hyphal organization and reproduction; Cell structure and components; cell wall, pigment system, reserve food (of all groups represented in the syllabus), methods of reproduction and Classification* ***Major areas of the subject***

Fungi are suitable for upper-level undergraduate and graduate students following courses in general biology and microbiology.Emphasis is placed on those fungi that are commonly covered in mycology courses, and encountered by students in soil, air and water habitats. |
| **11. Course objective:**The course will cover mold and yeast groups of fungal pathogenes topics. To comprehend what diseases that the medically important fungal organisms cause and the details of the infection process. Lecture material supplemented with slides (mycology and pathology of the diseases. Student can synthesize the material presented concerning the pathogenic mechanisms associated with each of the pathogens. They can define the different fungal infections including the ones caused by opportunistic fungi, superficial, cutaneous, subcutaneous and systemic fungi. Student can classify the medically important fungal organisms on the basis of reproduction, taxonomy, macroscopic and microscopic morphology and mycoses. They can define the various laboratory diagnostic techniques and they can define how antifungal agents can be used in treatment |
| **12. Student's obligation**\***Exam policy:** Student should get at 2 exams during the course. There will be no make-up exams for absence students without medical report. **\*Classroom polices:****1- Attendance:** You are strongly encouraged to attend class on a regular basis, as participation is important to your understanding of the material. This is your opportunity to ask questions. Students are responsible for obtaining any information they miss due to absence. **2-** **Lateness:** Lateness to class is disruptive**3-** **Electronic devices:** Allcell phones are to be turned off at the beginning of class and put away during the entire class.**4-Talking:** During class, please refrain from side conversations. These can be disruptive to other students and the professor, and not Disrespectful to both the professor and to other students. |
| **13. Forms of teaching**Using of Course Book and PowerPoint  |
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| **Mid-term exam** | **quizzes**  | **report and homework** | **Activities** |  **total** |
| **15** | **6** | **8** | **6** | **35** |

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| **15. Student learning outcome:**After completion of this year, student will be able to:* Define common terms used in mycology and the characteristics of pathogenic fungi
* Identify all the kinds of pathogenic fungi
* Different structure and shape of mould and yeast
* Identify mould and yeast as they relate to patient
* Compare different mould and yeast replication strategies
* Relation of mould and yeast to different disease

Importance of antifungal against pathogenic fungi   |
| **16. Course Reading List and References‌:**Al-Doory, Y. (1980). Laboratory Medical Mycology. Lea and Febiger. Philadelphia. Printed in the United States of America. 401pp.Calderone, R.A. and Cihlar, R.L. (2002). Fungal pathogenesis principles and clinical application. Marcel Dekker, Inc. 762pp.Howard, D. H. (2002). Pathogenic Fungi in Humans and Animals. 2nd Edition, Marcel Dekker, Inc.790pp.Benson, H. J. (2002). Microbiological Applications, Laboratory Manual in general microbiology. 8thed.McGraw Hill. 477pp. |
| **17. The Topics:** | **Lecturer's name** |
| **In this section the lecturer shall write titles of all topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture** **Course programme****Week 1: Isolation of Fungi****Week 2: Identification of Fungi****Week 3: Fungal Reproduction** **Week 4: Classification of Fungi****Week 5: Preservation and maintenance of fungal culture****Week 6: Classification of Fungi** **Week 7: Zygomycota****Week 8: Ascomycota****Week 9: Order: Clavicipitales****Week 10: Order: Onygenales****Week 11: Phylum: Basidiomycetes****Week 12: Order: Agaricals** | Lecturer's nameex: (2 hrs) |
| **18. Practical Topics (If there is any)** |  |
| In this section the lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture  | Lecturer's nameex: (2 hrs) |
| **19. Examinations:*****1. Compositional:*** In this type of exam the questions usually start with Explain how, what are the reasons for…? Why…? How….?With their typical answersExamples should be provided***2.******True or false type of exams:*** In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided***3. Multiple choices:*** In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided. |
| **20. Extra notes:**Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ** This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*  |