



Course Specifications

Revised November 2019

Course Title:	Mycology
Course Code:	4012432 -3
Program:	BSc Microbiology
Department:	Department of Biology
College:	Faculty of Applied Science – Department of Biology
Institution:	UM AL – QURA UNIVERSITY
Revision Date	November 2019

Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	4
1. Course Description	4
2. Course Main Objective.....	4
3. Course Learning Outcomes	4
C. Course Content	5
D. Teaching and Assessment	7
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	7
2. Assessment Tasks for Students	9
E. Student Academic Counseling and Support	10
F. Learning Resources and Facilities	10
1. Learning Resources	10
2. Facilities Required.....	10
G. Course Quality Evaluation	10
H. Specification Approval Data	11

A. Course Identification

1. Credit hours: 3 hours
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 2nd Year / Level 4
4. Pre-requisites for this course (if any): Introductory Microbiology 4012401-4
5. Co-requisites for this course (if any):

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	50 %
2	Blended		-
3	E-learning		-
4	Correspondence		-
5	Other	30	50 %

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	42
3	Tutorial	-
4	Practical/Field work/Internship	6
5	Others (specify)	30
	Total	108
Other Learning Hours*		
1	Study	30
2	Assignments	8
3	Library	15
4	Projects/Research Essays/Theses	10
5	Others (specify)	-
	Total	63

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

The course of Mycology is designed to identify the students of microbiology the general characters of fungi, their distribution in nature and their positive and negative roles in life. Also, the course will show the students how they can classify fungi into 5 sub divisions and genera included in each. Students will follow up life cycles in some famous genera resembling all sub divisions.

2. Course Main Objective

❖ After completing this course student should be able to:

- Identify the distribution of fungi in nature.
- List the positive and the negative roles of fungi in life.
- Discuss the systematic classification of fungi.
- Describe the general characters of fungi.
- Recognize the characteristics of myxomycetes and their important genera.
- List the different divisions related to Eumycota.
- Describe Mastigomycotina and some related genera .
- Compare between some genera related to Zygomycotina
- List the way of classification of Ascomycotina
- State the economic importance of ascomycetous fungi such as Saccharomyces, Aspergillus, Penicillium.
- Summarize the way of classification of Basidiomycetes and some resembling genera
- Discuss the life cycles of rust and smut fungi
- Summarize the characters and classification of Deuteromycotina
- Label some of resembling genera in Deuteromycotina

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	<p>Knowledge:</p> <p>❖ Upon successful completion of this course The student will be able to:</p> <ul style="list-style-type: none"> • Identify the distribution of fungi in nature. • List the positive and the negative roles of fungi in life. • Discuss the systematic classification of fungi. • Describe the general characters of fungi. • Recognize the characteristics of myxomycetes and their important genera. • List the different divisions related to Eumycota. • Describe Mastigomycotina and some related genera . • Compare between some genera related to Zygomycotina • List the way of classification of Ascomycotina • State the economic importance of ascomycetous fungi such as Saccharomyces, Aspergillus, Penicillium. • Summarize the way of classification of Basidiomycetes and some resembling genera • Discuss the life cycles of rust and smut fungi • Summarize the characters and classification of Deuteromycotina • Label some of resembling genera in Deuteromycotina 	
2	<p>Skills:</p>	

CLOs		Aligned PLOs
2.1	<p>Cognitive skills to be developed</p> <ul style="list-style-type: none"> ❖ Having successfully completed the course students should be able to: <ul style="list-style-type: none"> • Summarize the characteristic features of fungi • Compare between myxomycota and eumycota. • Diagram some fungal genera within myxomycota • List the general characters of mastigomycotina. • Describe the ways of asexual and sexual reproduction in zygomycotina • List the characteristic features of ascomycotina and their classification • Differentiate between famous genera within ascomycetes. • Write economic importance of Aspergillus and Penicillium • Subdivide the different classes in basidiomycetes • Diagram the studied basidiomycetes genera • Summarize the characters of deuteromycotina • Compare between studied genera within deuteromycotina 	
2.4.	<p>Psychomotor Skills</p> <ul style="list-style-type: none"> ❖ Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> • Prepare of student skills to use microscope • Enhancement of student ability to use light microscope in accuracy. • Prepare culture media, the ways of isolation and purification of fungi cultures. 	
3 Competence:		
3.1	<ul style="list-style-type: none"> ❖ Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> • Developing oral presentations. • Communicating personal ideas and thoughts. • Work independently and as part of a team to finish some assignments. • Communicate results of work to others. • Use of needed precautions when dealing with pathogen microorganisms • Demonstrate professional attitudes and behaviors towards others. • Propose the smart questions • Understand and dissecting the problem so that it is fully solved understood. • Demonstrate the assertiveness for his decision. • Demonstrate his capability for the responsibility and Accountability • Show Effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, non-verbal communication, good listening for the others, questioning, good manners, problem solving, social awareness, self-management, responsibility and accountability). • Enhancing the ability of students to use computers and internet. • Interpret the laboratory data • Know how to write a report. 	

C. Course Content

1 Topics to be Covered		
Topic	No of Weeks	Contact hours
Introduction: - what are fungi – distribution of fungi in nature – the positive role of fungi in life (food industry – medicinal industry – industrial microbiology – biocontrol – soil fertility)	1	2
General characters of fungi: - the negative role of fungi in life (food deterioration – human, animal and plant diseases) - fungal nutrition – spore formation in fungi (asexual and sexual spores)	1	2
Fungal classification: - Myxomycotina (their general characteristics) - study of some resembling fungi (<i>Arcyria</i> , <i>Physarum</i> , <i>Stemonitis</i> , <i>Plasmodiophora</i>)	1	2
- Fungal classification (continued): - Mastigomycotina - general characteristics - study of some resembling fungi (<i>Synchytrium</i> , <i>Allomyces</i> , <i>Saprolegnia</i>)	1	2
- Fungal classification (continued): - Mastigomycotina - <i>Pythium</i> , <i>Phytophthora</i> , downy mildews fungi, <i>Albugo</i>	1	2
- Fungal classification (continued): - Zygomycotina - general characteristics - Formation of zygospore - study of some resembling fungi (<i>Rhizopus</i> , <i>Mucor</i> , <i>Phycomyces</i>)	1	2
- Fungal classification (continued): - Zygomycotina - <i>Pilobolus</i> , <i>Mortierella</i> , <i>Thamnidium</i> , <i>Syncephalastrum</i> , <i>Cunninghamella</i> , <i>Entomophthora</i> .	1	2
- Fungal classification (continued): - Ascomycotina - general characteristics - Types of fruiting bodies - study of some resembling fungi (<i>Saccharomyces</i> , <i>Schizosaccharomyces</i> , <i>Taphrina</i>)	1	2
- Fungal classification (continued): - Ascomycotina (continued) - study of some resembling fungi - <i>Aspergillus</i> , <i>Penicillium</i> and their economic importance.	1	2
- Fungal classification (continued): - Ascomycotina (continued) – powdery mildews fungi. - <i>Sordaria</i> , <i>Claviceps</i> , medicinal importance of ergot - <i>Peziza</i> , <i>Morchella</i> , <i>Terfezia</i> .	1	2
- Fungal classification (continued): - Basidiomycotina - general characteristics - Rust fungi	1	2

- Fungal classification (continued): - Basidiomycotina(continued) - Smut fungi - <i>Agaricus, Amanita, Coprinus, Lycoperdon, Hydenum, Clavaria, Phallus, Geastrum</i>	1	2
- Fungal classification (continued): - Deuteromycotina - general characteristics - Classification of Deuteromycotina - <i>Candida</i> and their medicinal importance	1	2
- Fungal classification (continued): - Deuteromycotina (continued) - Studying some resembling genera: <i>Botrytis, Trichoderma, Microsporium, Alternaria, Fusarium, Graphium, Rhizoctonia</i>	1	2
	14 weeks	28 hours

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	<ul style="list-style-type: none"> ❖ Upon successful completion of this course The student will be able to: • Identify the distribution of fungi in nature. • List the positive and the negative roles of fungi in life. • Discuss the systematic classification of fungi. • Describe the general characters of fungi. • Recognize the characteristics of myxomycetes and their important genera. • List the different divisions related to Eumycota. • Describe Mastigomycotina and some related genera . • Compare between some genera related to Zygomycotina • List the way of classification of Ascomycotina • State the economic importance of ascomycetous fungi such as <i>Saccharomyces, Aspergillus, Penicillium</i>. • Summarize the way of classification of Basidiomycetes and some resembling genera • Discuss the life cycles of rust and smut fungi 	<ul style="list-style-type: none"> • Lectures which must start with preliminary one showing course contents • Using images and movies • Encouraging student to isolate fungi from different localities and habitat. • Enable the reference books and scientific sites concerning fungi in internet. • All students will be involved in on-line learning process and each student is required to create an E-mail address to facilitate student web 	<ul style="list-style-type: none"> • Periodical exam and reports 10% • Mid- term theoretical exam 20% • Mid-term practical exam 5% • Final practical exam 15% • Final exam 40%

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	<ul style="list-style-type: none"> Summarize the characters and classification of Deuteromycotina Label some of resembling genera in Deuteromycotina 		
2.0	Skills		
2.1	<p>Cognitive skills</p> <ul style="list-style-type: none"> Upon successful completion of this course The student will be able to: <ul style="list-style-type: none"> Summarize the characteristic features of fungi Compare between myxomycota and eumycota. Diagram some fungal genera within myxomycota List the general characters of mastigomycotina. Describe the ways of asexual and sexual reproduction in zygomycotina List the characteristic features of ascomycotina and their classification Differentiate between famous genera within ascomycetes. Write economic importance of Aspergillus and Penicillium Subdivide the different classes in basidiomycetes Diagram the studied basidiomycetes genera Summarize the characters of deuteromycotina Compare between studied genera within deuteromycotina 	<ul style="list-style-type: none"> Giving examples both in lectures and labs and sharing students in microscopical examination and description. Practical isolation of fungi from different habitats in lab and making discussion with students how they can detect their systematic classification depending on their morphological and microscopical characters. Lectures Brain storming Discussion 	<ul style="list-style-type: none"> - Exam must contain questions that can measure these skills. - Discussions after the lecture.
2.2	<p>Psychomotor Skills</p> <ul style="list-style-type: none"> Upon successful completion of this course, the student is expected to be able to: <ul style="list-style-type: none"> prepare of student skills to use microscope Enhancement of student ability to use light microscope in accuracy. Prepare culture media, the ways of isolation and purification of fungi cultures. 	<ul style="list-style-type: none"> Follow up students the students in lab and during carryout all the laboratory experiments 	<ul style="list-style-type: none"> Giving additional marks for the students they have accurate laboratory results and good seminar presentation Practical exam.
3.0	Competence		
3.1	<ul style="list-style-type: none"> Upon successful completion of this course The student will be able to: 	<ul style="list-style-type: none"> Lab work Case Study Active learning Small group 	<ul style="list-style-type: none"> Oral exams. Evaluate the efforts of each student in

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	<ul style="list-style-type: none"> Developing oral presentations. Communicating personal ideas and thoughts. Work independently and as part of a team to finish some assignments. Communicate results of work to others. Use of needed precautions when dealing with pathogen microorganisms Demonstrate professional attitudes and behaviors towards others. Propose the smart questions understand and dissecting the problem so that it is fully solved understood. Demonstrate the assertiveness for his decision. Demonstrate his capability for the responsibility and Accountability Show Effective verbal communication with clarity and must be characterize with the following interpersonal attributes; (verbal communication, non-verbal communication, good listening for the others, questioning, good manners, problem solving, social awareness, self-management, responsibility and accountability). Enhancing the ability of students to use computers and internet. Interpret the laboratory data. Know how to write a report. 	<p>discussion</p> <ul style="list-style-type: none"> Homework (preparing a report on some topics related to the course depending on web sites). Seminars presentation Practical during carryout the experiments in the lab. 	<p>preparing the report.</p> <ul style="list-style-type: none"> Evaluate the scientific values of reports. Evaluate the work in team Evaluation of the role of each student in lab group assignment Evaluation of students presentations.

2. Assessment Tasks for Students

5. Schedule of Assessment Tasks for Students During the Semester				
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Exam duration	Proportion of Final Assessment
1	Periodical Exam (s)	4	15 min	10 %
2	Mid Term Exam (Theoretic)	8	60 min	20 %
3	Mid Term Exam (practical)	9	30 min	10 %
4	Reports and essay	11	--	5 %
5	Final Practical Exam	15	60 min	15 %
6	Final Exam	16	120 min	40 %
Total Marks				100%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Office hours: 10hrs.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Course note prepared by faculty member responsible for the course: 1. Prof. Dr. Khaled Elbanna
Essential References Materials	<ul style="list-style-type: none"> Principles of Mycology(2005). Abdallah Naser AlRahma Fungi (2002). Abdel Aziz Kablan, Idris Monir Turkey, Mohamed Mohamed Alhoseny
Electronic Materials	<ul style="list-style-type: none"> http://www.mycolog.com/fifhtoc.html http://www.biolib.cz/en/gallery/dir22/ http://en.wikipedia.org/wiki/Fungi
Other Learning Materials	PPT prepared by Prof. Dr. Khaled Elbanna <ul style="list-style-type: none">

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> Class room is already provided with data show The area of class room is suitable concerning the number of enrolled students (68) and air conditioned
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> Digital lab containing 15 computers.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> Incubators, autoclaves, measuring equipment, water bath, digital balances, pH meters, centrifuge, safety facilities. Availability of some reference bacterial strains Different media All chemicals and reagents that needed Availability all fungi strains Availability all fungi slides

G. Course Quality Evaluation

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching

<ul style="list-style-type: none"> • Questionaries • Open discussion in the class room at the end of the lectures.
2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department <ul style="list-style-type: none"> • Revision of student answer paper by another staff member. • Analysis the grades of students.
3. Processes for Improvement of Teaching <ul style="list-style-type: none"> • Preparing the course as PPT. • Using scientific movies. • Coupling the theoretical part with laboratory part • Periodical revision of course content.
4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) <ul style="list-style-type: none"> • After the agreement of Department and Faculty administrations
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. <ul style="list-style-type: none"> • Periodical revision by Quality Assurance Units in the Department and institution
Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.) Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)) Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Prepared by faculty staff: 1. Prof. Dr. Khaled Elbanna	Signature:
Date Report Completed: November 2019	
Revised by: 1. Dr. Khaled Elbanna 2. Dr. Hussein H. Abulreesh 3. Dr. Shady Elshahawy	Signature:
Date: November 2019	
Program Chair Dr. Hussein H. Abulreesh	Signature:
Dean	Signature:
Date:	