Course Specification
(Bachelor)

Course Title:	*Mycology*
Course Code:	*BIO1413*
Program:	*Bachelor of Science in Biology*
Department:	*Department of Biology*
College:	*Faculty of Science*
Institution:	*University of Tabuk*
Version:	***Course Specification Version Number***
Last Revision Date:	*September 2023*

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours:					
3 Credit (2 theoretical + 1 practical) hours.					
2. Course type					
A.	☐University	☐ College	☒ Department	☐Track	☐Others
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: (8th Level / 4th year)					
4. Course general Description:					
This course sheds light on the kingdom of fungi (Mycology) and provide better understanding of the fungal diversity, ecology, cellular organization and structure, physiology, life history strategies, reproduction and dispersal, fungal classification, and roles of fungi in ecosystems, fungal symbioses, plant, human and animal pathogens, predaceous fungi, biological control, fungal food fermentations, plant pathogens, mycotoxins and food spoilage, pharmaceuticals, fungi in biofuels, and biotechnology. Furthermore, the course will discuss different phyla, classes orders, and some important genera and species of fungi. The course will emphasis is on collecting, identifying, and culturing fungi from the environment. Students will also investigate how fungi affect humans as plant and animal pathogens, as well as food and beverage sources.					
5. Pre-requirements for this course (if any):					
General Microbiology (BIO1206).					
6. Co-requirements for this course (if any):					
None					
7. Course Main Objective(s):					
By the end of this course the students are expected to be able to: - Understanding of the biology, taxonomy, nutrition, reproduction, and phylogeny of fungi. - Discussing the significance of fungi in a variety of ecological roles & its economic importance. - Understanding the biological role caused by fungi to plant, human and animals. - Describing the fungi's higher taxonomy and how they relate to other organisms. - Discussing the characteristics of the fungal kingdom's major classes and orders.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	2	50%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		
5	**Others (Lab work)**	2	50%

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		**60**

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	To recognize the basic structure, morphology of fungal spores, hyphae and fruiting bodies.	K1	-Lectures. -Class discussion. -Group discussion. -Case studies.	-Quizzes -Midterm examination. -Final examination. -Class discussion and participation. -Homework (Problem-solving).

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.2	To describe the general characteristics of fungi, their ecological roles and how these relate to ecosystem health and global carbon cycles.	K2	-Lectures. -Class discussion. -Group discussion. -Homework assignments. -Case studies.	-Quizzes -Midterm examination. -Final examination. -Class discussion and participation. -Homework assignments.
2.0	**Skills**			
2.1	To summarize the principles, important characteristics and schemes used to differentiate taxonomically between the different genera of each group of fungi.	S1	-Lab work. -Class discussion. -Group discussion. -Brainstorming.	-Quizzes -reports -Final examination. -Class discussion and participation. -Homework (Problem-solving).
2.2	To predict, write the name of fungi based on the type of spores and mycelium structure through microscope examination of different fungal genera.	S2	-Lab work. -Class discussion. -Group discussion. -Brainstorming.	-Quizzes -reports -Final examination. -Class discussion and participation. -Homework (Problem-solving).
2.3	Carry out practical skills in isolation of fungal specimens from the environment, culture, preserve, examine, identify, and curate	S2	-Lab work. -Class discussion. -Group discussion. -Brainstorming.	-Quizzes -reports -Final examination. -Class discussion and participation.

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
	specimens in a fungus collection			-Homework (Problem-solving).
3.0	**Values, autonomy, and responsibility**			
3.1	Work in groups to improve interpersonal relationships.	V1	-Self-learning. -Lab work -Class discussion. -Group discussion. -Individual or group presentation.	-Class discussion and participation. -Homework (Problem-solving).

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Mycology: Distribution & diversity of fungi in nature important features, History, Hyphal forms, Reproduction, Life cycle pattern.	2
2.	Structure and Reproduction in Fungi Hyphal structure.	2
3.	Types of reproduction (Sexual and Asexual), Types of spores.	2
4.	Classification of Fungi: Based on colony morphology, Modes of Nutrition and Reproduction. Systemic classification – Groups of fungi	2
5	Myxomycete: General characteristics & Study of some resembling fungi (Argyria, Phys arum, Tenonitis, Plasmodiophora).	2
6.	Division: Mastigomycotina - General characteristics & Study of some resembling fungi Phylum Chytridiomycota (Synchytium, Allomyces,Saprolegnia, Pythium , Phytophthora, downy mildews fungi, Albugo.	2
7.	Division: Zygomycotina - General characteristics & Study of some resembling fungi (Rhizopus, Mucor, Phycomyces, Pilobolus, Morterilla, Thamnidium, Syncepalastrum, Cunninghamella,Entomophthora.	2
8.	Division; Ascomycotina - General characteristics & Study of some resembling fungi (Saccharomyces, Schizosaccharomyces, Taphrina) (part1).	2

9.	Aspergillus, Penicillium and their economic importance, Powdery mildews fungi, Sordaria, Claviceps,medicinal importance of ergot & Peziza, Morchella, Terfezia (part 2).	2
10.	Division: Glomeromycota: Glomoid, Lycophytes, Mycorrhiza, Paris-type, root nodules, Plant Mycology	2
11.	Plant fungal diseases, Fungal toxins, Biological importance of fungi and fungus like organisms.	2
12.	Medical Mycology: Human and animal diseases, Antifungal drugs	2
13.	Economic importance of Fungi	2
14.	Bio fertilizers, Antibiotics, Ethanol, Organic acids	2
15.	Enzymes Production, Single-Cell Protein, Mushroom Cultivation	2
Total		**30**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Class Participation	During whole teaching period	5
2.	Homework (Problem-solving)	3 to 13	5
3.	Short Exams (Quizzes)	During whole teaching period	5
4.	Midterm Theoretical Examination	8-9	20
4.	Reports (For Practical)	During whole teaching period	10
5.	Final Practical Examination	15	15
6.	Final Theoretical Examination	17	40

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	- Moore D, Geoffrey D. Robson and Anthony P. J. Trinci 2020. 21st Century Guidebook to fungi. 2nd Edition, Cambridge University Press, Cambridge, UK - Kibbler, C. C., Barton, R., Gow, N. A., Howell, S., MacCallum, D. M., & Manuel, R. J. (Eds.). (2017). Oxford textbook of medical mycology. Oxford University Press.
Supportive References	- Chander, J. (2017). Textbook of medical mycology. JP Medical Ltd. - Moore, T., Robson, G. D., & Trinci, A. P. (2012). Textbooks. The Edinburgh history of the book in Scotland, 2, 310-314.
Electronic Materials	- Websites on the internet that are relevant to the topics of the course: www.sciencedirect.com, Scientific web sites, such as Mycobank.
Other Learning Materials	Multi-media associated with the textbook and the relevant websites

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Well-equipped classrooms and laboratories that accommodate a sufficient number of students.
Technology equipment (projector, smart board, software)	Multimedia projectors and smart boards.
Other equipment (depending on the nature of the specialty)	Laboratory instruments such as: autoclave- oven- microscope- spectrophotometer- incubator-air laminar flow-shaking incubator-distillatory- ultrabalance-refrigerator- deep freezer-bunsen burner flame.

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	- Students. - Faculty members.	Indirect & direct: - Questionnaires. - Meetings.
Effectiveness of Students assessment	- Quality and development committee. - Department chair.	- Course report. - Program annual report.
Quality of learning resources	- Plan and program committee. - Students. - Staff members.	Indirect & direct: - Questionnaires. - Meetings. - Reports.

Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	- Quality and development committee. - Peer Reviewer. - Program leaders.	Indirect & direct: - Questionnaires. - Meetings. - Reports.
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	PROGRAMS AND STUDY PLANS COMMITTEE
REFERENCE NO.	
DATE	SEPTEMBER 2023