

**LANDMARK UNIVERSITY OMU ARAN
COLLEGE OF SCIENCE AND ENGINEERING
DEPARTMENT OF BIOLOGICAL SCIENCES**

Omega 20115/16

COURSE COMPACT

Course Code: MCB 425

Course Title: Pathogenic Mycology (2 Units)

Course status: Optional

Course Duration: Two hours per week for 14 weeks (28 hours):

Course Lecturers: Irokanulo E O., (PhD Applied Microbiology)

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Office Location: CSE Building Room A312

Consultation Hours: Monday – Fridays (Lecture free hours not later than 6pm)

Course Content:

Introduction of pathogenic fungi, Reproduction and Classification of Pathogenic fungi, Structure of fungi, Pathology and Pathogenesis, Laboratory diagnosis, Prophylactic and Therapeutic procedures of some selected Mycotic diseases, Prophylactic and Therapeutic procedures of Superficial (Dermatophytes) mycoses, Prophylactic and Therapeutic procedures of subcutaneous mycoses, Prophylactic and Therapeutic procedures of Deep or Systemic mycoses, Prophylactic and Therapeutic procedures of opportunistic mycoses.

Course Description:

The course will introduce the factors associated with infection, manifestation and treatment of diseases due to pathogenic fungi of humans, animals and plants. All aspects related to reproduction, structure and classification of the pathogenic fungi will be taught. Mechanism of disease acquisition and spread, their pathology, diagnosis and treatment will also be taught. It is expected that students will at the end of their study be equipped with requisite knowledge on evaluating disease syndromes associated with fungal diseases as well as issues relating specimen collection, handling and processing, diagnosis and characterization of pathogenic fungi.

Course Justification:

Understanding the biology of pathogenic fungi is crucial in dealing with the devastating effects these group of microorganisms have continued to have on plants, humans and animals. A course in pathogenic fungi will help to delineate the very numerous, ubiquitous but saprophytic fungi that most often contaminate plant, animal and human materials which often may lead to misdiagnosis.

A. Course Objective / Goals

At the end of the course, students will be able to;

- Describe in detail what Pathogenic Mycology entails including the classification and structure of the aetiologic agent of mycoses.
- Understand the source, mode of spread and the medical importance of the disease
- Carry out laboratory diagnosis of the disease
- Describe the preventive and treatment methods based on the use of anti fungal agents.

Course Requirement:

Appropriate texts (books, journals and access to E- learning) for reference are important. Pathogenic fungi are to a large extent infectious microorganisms. Therefore, a course in pathogenic fungi require that every participating student in addition to having the relevant study materials, first understands the dangers associated with exposure and handling of the agent. Students are therefore required to acquaint themselves with necessary personal protective equipment that they need for handling and processing specimens suspected to harbour pathogenic fungi.

Method of Grading:

	Grading	Score (%)
1	Assignment	10
2	Test + Practical	20
3	Final Examination	70
4	Total	100

Method of Lecture Delivery / Teaching:

- 1 The use of multimedia will be adopted in normal lecture delivery. This will be complemented with assignments, tests and tutorials. Practical sessions shall involve specimen collection, processing, culture, isolation and identification of pathogenic fungi.
- 2 Students will be taught biosafety techniques applicable in the handling of specimens for fungal isolation.

Course Outline:

Contents/topic	Teacher
<p>Week 1: Introduction: Classification of Pathogenic fungi. Objective: <i>An introduction to the diversity of fungi that cause disease in humans or other organisms will be made to the students. The students will learn the classification of pathogenic fungi that are responsible for mycotic diseases.</i> Description: 1. History of the changing ideas on classification of fungi 2. Phylogenetic relationship of species and genera. Study question: The pathogenic fungi</p>	Irokanulo E.O
<p>Week 2: Classification of Pathogenic fungi Objective: <i>The students will learn the classification of pathogenic fungi based on clinical pathology and natural ecology of the organisms</i> Description: Classification of pathogenic fungi based on their ecology reproduction and pathology. Study question: Ecology of pathogenic fungi</p>	Irokanulo E.O
<p>Week 3: Structure of fungi Objective: <i>The general structure and features of fungal cell shall be considered. Students will learn the features relating to resting, vegetative and infecting stages of a fungus.</i> Description: - Unicellular or multicellular thallus: Changes of dimorphic fungi from the unicellular to multicellular state depending on environmental conditions Study question: Differentiating between spores and vegetative state of a fungus</p>	Irokanulo E.O
<p>Week 4: Reproduction of Pathogenic fungi Objective: <i>The students will learn and understand the complex fungal reproduction which reflects the differences in lifestyles and genetic</i></p>	Irokanulo E.O

<p><i>makeup within this diverse kingdom of organisms.</i></p> <p>Description: Mode of reproduction of fungi and its relationship with the environment in which the fungus exists</p> <p>Description: How and when fungi reproduce.</p>	
<p>Week 5: Pathology and Pathogenesis</p> <p>Objective: <i>Students are to learn and understand the general concepts of fungal diseases and pathogenesis.</i></p> <p>Description:</p> <ul style="list-style-type: none"> - Fungal entry into host, adaptation and propagation, dissemination and host factors. - Clinical manifestation of fungal diseases. <p>Study question: How fungal disease develops and spreads in a host</p>	Irokanulo E.O
<p>Week 6: Introduction: Prophylactic and Therapeutic procedures of some selected mycotic diseases.</p> <p>Objective: <i>The students will learn and understand the various prophylactic and therapeutic procedures relevant to mycotic diseases.</i></p> <p>Description:</p> <ul style="list-style-type: none"> - Understanding when to use antifungal prophylaxis - What substances and procedures constitute antifungal prophylaxis. - Factors that may compromise fungal disease therapeutic outcomes. <p>Study question: The overriding importance of prophylaxis in containing fungal disease.</p>	Irokanulo E.O
<p>Week 7: Prophylactic and Therapeutic procedures of Superficial (Dermatophytes) and subcutaneous mycoses</p> <p>Objective: <i>The students will learn and understand the various prophylactic and therapeutic procedures relevant to superficial and subcutaneous mycoses.</i></p> <p>Description:</p> <ul style="list-style-type: none"> - Mycotic agents responsible for Superficial and subcutaneous mycoses. - Sources of fungi responsible for Superficial and subcutaneous mycoses. - Prophylactic and therapeutic procedures that can be used against Superficial and subcutaneous mycoses <p>Study question: The need to adopt prophylaxis in Superficial and subcutaneous mycoses.</p>	Irokanulo E.O

<p>Week 8: Prophylactic and Therapeutic procedures of Deep or Systemic mycoses</p> <p>Objective: <i>The students will learn and understand the various prophylactic and therapeutic procedures relevant to Deep or Systemic mycoses</i></p> <p>Description:</p> <ul style="list-style-type: none"> - Mycotic agents responsible for systemic mycoses. - Sources of fungi responsible for systemic mycoses. - Prophylactic and therapeutic procedures that can be used against Deep or Systemic mycoses - <i>In addition, they will learn of the problems posed by progressive systemic fungal infections.</i> <p>Study question: The need to adopt prophylaxis in dealing with Deep or Systemic mycoses.</p>	Irokanulo E.O
<p>Week 9: Prophylactic and Therapeutic procedures of opportunistic mycoses</p> <p>Objective: <i>The students will learn and understand the various prophylactic and therapeutic procedures relevant to opportunistic mycoses</i></p> <p>Description:</p> <ul style="list-style-type: none"> - Mycotic agents responsible for opportunistic mycoses. - Sources of fungi responsible for opportunistic mycoses. - Prophylactic and therapeutic procedures that can be used against opportunistic mycoses <p>Study question: The need to adopt prophylactic treatment against opportunistic mycoses.</p>	Irokanulo E.O
<p>Week 10: Laboratory diagnosis</p> <p>Objective: To establish or confirm the diagnosis of fungal infection of the blood, skin, hair and nail and other tissues.</p> <p>Description: Specimen collection, handling, processing and biosafety issues relating to fungal diagnosis.</p> <p>Study question: How fungal specimens are collected and processed.</p>	Irokanulo E.O
<p>Week 11: Practical and Assignment</p> <p>Objective: <i>The students will be engaged in practical sessions involving fungal isolation techniques using Lacto-phenol cotton blue for identification.</i></p>	Irokanulo E.O

Week 12: Test	Irokanulo E.O
Week 13 Tutorial	Irokanulo E.O
Objective: <i>The students will engage in moderated group discussions to review topics earlier studied for better understanding and application.</i>	

Ground Rules and Regulation:

1. Punctuality
2. Dedication and Diligence

Alignment with Goals and Vision of Landmark University:

To prepare the students and harness their potential for future challenges in applied research and diagnosis against human, animal and plant diseases due to pathogenic fungi.

Contemporary Issues / Industry Relevance:

- 1 Understanding the relationship between pathogenic fungi, man, animals and environment: their medical importance to man and plants in disease causation and their role in pharmaceutical industry.
- 2 To consider the application of fungi in drug development

Recommended Reading:

RIPPON, JW (1982) Medical mycology
 Prescott's Microbiology, 8th ed. (International ed. 2011)
 Todar's Textbook of Bacteriology (Kenneth Todar PhD)
 Microbiology Clinical: Bruker
 Bernward Rhode and Gabriele Hartmann (1980) Introducing mycology by examples. Hamburg.

E. O. Irokanulo