COURSE CONTENT

Course

Course Code: MCB211
Course Title: Introduction to General Microbiology (3 Units)
Course status: Compulsory

Course Contact Hours and Duration

Three hours per week for 15 weeks (45hours)

Venue and Time

LR3** Mondays 12:00noon - 1:00pm
LR3** Tuesdays 4:00 – 6:00pm

Course lecturer: Okolie CEO

Lecturer Data

Name of lecturer: OKOLIE Charles
Highest qualifications obtained: PhD
Department: Biological Science
College: College of Science and Engineering
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Course Content

History of microbiology. Organization of prokaryotic and eukaryotic cells. Microbial cell structure and function. Structure, general characteristics and reproduction of viruses, bacteria, fungi, algae, lichens, protozoa and rickettsia. General methods for studying the specialized groups.

Course Description

The course MCB211 teaches the important fundamentals in microbiology. From history to basic methods, the course is structured to provide a stepwise teaching of microbiology. Students offering this course are required to attempt and submit any given assignment promptly. Students' knowledge will be examined via continuous assessment and the mid-semester examination which add up to a maximum mark of 30 and the semester examination which carries a maximum mark of 70, making a total of 100 marks.

Course Justification

i. The course is designed to provide an introductory background to microbial life.
ii. Understanding of MCB211 will help the student create a picture of the structures and functions which differentiate prokaryotes from eukaryotes.
iii. Understanding of MCB211 will provide the student with the basic information on life that cannot be seen without aid.
iv. Understanding of MCB211 will provide the student with information on the various possible uses of microbes in agriculture, industry, health and the environment.
v. The students will be prepared for future studies in microbiology including Microbial Ecology (MCB221), Mycology (MCB313) and Microbial physiology (MCB312).

Course objectives

At the end of this course, students should be able to:

History of microbiology. Organization of prokaryotic and eukaryotic cells. Microbial cell structure and function. Structure, general characteristics and reproduction of viruses, bacteria, fungi, algae, lichens, protozoa and rickettsia. General methods for studying the specialized groups.

i.Discuss the discoveries which informed the microbiology of today.
ii.Differentiate between prokaryotic and eukaryotic cells.
iii.Explain the structures and functions which make up microbes.
iv.Describe the methods employed to study the various microbial groups.

Course Requirement

It is expected that the students have knowledge of forms and functions from lower level biology courses.

Method of Grading- An illustration below

S/N	**Grading**	**Score** (%)
1.	Test	10
2.	Assignment	5
3.	Practical (laboratory work)	15
4.	Examination	70
	Total	**100**

Course Delivery Strategies

i.Teaching

ii. Tutorials

iii. Practical sessions

Method of Lecture Delivery/Teaching Aids

Classroom teaching including the use of magnetic boards and visual aids such as powerpoint slide projectors. Real-life examples will be used to link the classroom training with the students' everyday life.

DETAILS OF LECTURE CONTENT

- **Week of 5th October, 2015**
- **Topic:** Talking through the subject of MCB211 – Introduction to General Microbiology.
- **Objectives**

At the end of the talk, the students should be able to have a basal understanding of what microbes are and the previous persons whose discoveries contributed in shaping the microbiology we study today. The relevance of Microbiology to agriculture, industry, health, pharmacy and the life sciences will be highlighted.

- **Typical Study Question**

  What do you understand as microbiology? How can the study and practice of microbiology benefit a community that wants to a cure from poverty and disease?

- **Recommended Further Reading**

  (1) Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635

  (2) Todar's Online textbook of bacteriology. Kenneth Todar, University of Wisconsin ().

  (3) Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

- **Weeks of 12th and 19th October, 2015**
- **Topic:** History of microbiology
- **Objectives**

At the end of the talk, the students should get acquainted with the names of the persons whose discoveries contributed in shaping the microbiology we study today.

- **Typical Study Question**

  Mention the discoveries of the following persons in microbiology:

  I) Edward Jenner
  II) John Tyndall
  III) Joseph Lister
  IV) Antonie Van Leeuwvenhoek

- **Recommended Further Reading**

i) Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635

ii) Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

- **Week of 26th October, 2015**
- **Topic:** Organization of prokaryotic and eukaryotic cells
- **Objectives**

The central theme of this week is to let the student understand that there are two fundamentally different types of cells: Prokaryotic and Eukarytoic. The student should be able to discuss the major features of similarity and difference between the two types of cells.

- **Typical Study Question:**

Using typical examples where possible, illustrate the differences between eukaryotic and prokaryotic cells.

- **Recommended Further Reading**

I. Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635

II. Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

- **Week of 02 November, 2015**
- **Topic:** Structure, general characteristics and reproduction of bacteria.
- **Objectives**

At the end of the meeting(s) this week, students should show understanding of the structures, characteristics and method(s) of reproduction of typical bacteria. Students should also be able to identify the structures and characteristics which differentiate between Gram negative and Gram positive bacteria.

- **Study Question:**

Describe the structure in bacteria used for movement.

- **Recommended Further Reading**

i) Todar's Online Textbook of Bacteriology (http://textbookofbacteriology.net/structure.html).

ii) Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635

iii) Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

- **Week of 09th November, 2015**
- **Topic:** Structure, general characteristics and reproduction of viruses.
- **Objectives**

At the end of the meeting(s) this week, students should show understanding of the structures, characteristics and method(s) of reproduction of viruses.

- **Study Question:**

Describe the structure, characteristics and reproduction pathway of a named virus.

- **Recommended Further Reading**

I) Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635

II) Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

- **Week 16 November, 2015**
- **Topic:** Structure, general characteristics and reproduction of microscopic fungi.
- **Objectives**

At the end of the meeting(s) this week, students should show understanding of the structure, general characteristics and reproduction of fungi.

- **Study Question:**

Describe the structure, characteristics and method of reproduction of a named microscopic fungus.

- **Recommended Further Reading**

I. Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635

II. Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

- **Week of 23 November, 2015**
- **Topic:** Structure, general characteristics and reproduction of algae and lichens.
- **Objectives**

At the end of the meeting(s) this week, students should show understanding of the structure, general characteristics and reproduction of algae and lichens.

- **Study Question:**

Describe the major differences in structure, characteristics and method of

reproduction of algae and lichens.

- **Recommended Further Reading**

1. Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635
2. Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

- **Week of 30th November**
- **Topic:** Structure, general characteristics and reproduction of protozoa and rickettsia.
- **Objectives**

Following the meetings this week, the students should show understanding of the structure, general characteristics and reproduction of protozoa and rickettsia.

- **Study Question:**

Describe the major differences in structure, characteristics and method of reproduction of protozoa and rickettsia.

- **Recommended Further Reading**

1) Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635
2) Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

- **Week of 7th December, 2015**
- **Topic:** Tutorials and Continuous Assessment Test.
- **Objectives**

The tutorial will serve to remind the students all the covered areas of the course compact.

- **Study Question:**

Numerous questions will be sent ahead of the tutorial meeting.

- **Week of 14th December, 2015**
- **Topic:** General methods for studying the specialized microbial groups.
- **Objectives**

  At the end of the meeting(s) this week, the students should show understanding of the methods of studying viruses, bacteria, protozoa, algae, lichens, etc.

- **Study Question:**

  Describe a simple method for studying protozoa.

- **Recommended Further Reading**

  i. Introductory Microbiology. By J. Heritage, E. G. V. Evans, and R. A. Killington. Publisher: Cambridge University Press, 1996. Published online 2012. (Online link: http://ebooks.cambridge.org/ebook.jsf?bid=CBO9781139170635). Book DOI: http://dx.doi.org/10.1017/CBO9781139170635

  ii. Introduction to Microbiology. Jones and Bartlett Publishers. The PDF is available online (http://www.jblearning.com/samples/076371075X/Wheelis_CH01_001%20copy.pdf). NOT FOR SALE or DISTRIBUTION.

Week 13: Tutorials and Practicals
Week 14: Revision
Week 15: Examination