



EDO UNIVERSITY, IYAMHO
Department of Microbiology

MCB 411: Food Microbiology I

Instructor: *Mr. Arthur C. Okafor.*

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Lecture Period and Venue: Thursday 9:00am – 11:00am, ML 1.

Office hours: Tuesday, 1pm - 4pm, Thursday, 1pm - 4pm, Friday, 8am – 1pm.

Office: New Faculty of Science Block, Rm B2.

Description: This course is designed to give the students a deep knowledge of the role of microorganisms in foods: beginning with milestones in food microbiology; microorganisms important in foods, various sources of contamination of food; Principles of food spoilage including factors affecting microbial growth and activity in foods. Principles of food preservation with detailed study on various preservation methods. and conclude with contamination, spoilage and preservation of specific food.

Prerequisites: Students should have thorough knowledge of **General Microbiology, Introductory Genetics and Cell Physiology, Microbial genetics, Microbiological Techniques, Microbial Ecology, Mycology, Bacteriology and Soil Microbiology** courses offered in 200 Level and 300 Level.

Learning outcomes: At the completion of this course, students are expected to:

- (i) Recognize the features of various microorganisms important in food and their roles.
- (ii) Be able to trace various sources of contamination of foods.
- (iii) Understand the principles of food spoilage and preservation.
- (iv) Be acquainted with various preservation methods.

Assignments: There shall be a minimum of 3 assignments throughout the course in addition to a Mid-Term test and a Final Exam. Completed assignments must be submitted at the beginning of the lecture periods on the due dates. Assignments are organized and structured to serve as supplementary materials for the midterm test and final exam.

Grading: I will assign 10% of this class grade to assignments, 10% for participation in oral presentations, 10% for the midterm test and 70% for the final exam. The Final exam is comprehensive.

***Recommended Textbooks:**

- (1.) NESTER'S MICROBIOLOGY by Nester *et al.* 5th Edition. Jaypee Publishers.
- (2.) BROCK BIOLOGY OF MICROORGANISMS by Madigan *et al.*, 14th Edition. Pearson Education Inc.
- (3.) FUNDAMENTAL FOOD MICROBIOLOGY by Bibek Ray and Arun Bhunia. 4th Edition. CRC Press.

(4.)MODERN FOOD MICROBIOLOGY by James M. Jay. 6th Edition. An Aspen Publication.

Courseware: -MCB 411 –Food Microbiology I

The following documents outline the courseware for the course **MCB 411 –Food Microbiology**

I. Much of this material is taken from recommended text books.

1: Milestones in food microbiology.

- i. Historical background
- ii. Future perspective

2: Microorganisms important in foods.

- iii. Important Bacterial Genera
- iv. Important Mould Genera
- v. Important Yeasts Genera
- vi. Important Protozoan Parasites
- vii. Important Viruses

3: Sources of food contamination

- viii. Plants
- ix. Animal
- x. Air and Soil
- xi. Water
- xii. Sewage
- xiii. Food Ingredients
- xiv. Humans and Equipment

4: Principles of food spoilage.

- xv. Intrinsic factors
- xvi. Extrinsic factors

5: Principles of food preservation.

- xvii. Low temperature
- xviii. High temperature
- xix. Chemical preservatives
- xx. Irradiation method
- xxi. Drying
- xxii. Hurdle concept

6: Contamination, spoilage and preservation of specific foods:

- xxiii. Milk and milk products
- xxiv. Meat and meat products
- xxv. Fish and fish products
- xxvi. Vegetables and fruits
- xxvii. Egg and poultry products
- xxviii. Cereal and cereal products
- xxix. Heated canned foods

