

THOMAS ADEWUMI UNIVERSITY OKO COURSE OUTLINE		
Faculty	COMPUTING AND APPLIED SCIENCES	
Department	BIOLOGICAL SCIENCES	
Course title	ENVIRONMENTAL MICROBIOLOGY	
Year of study	3	
Course code	MCB 306	
Credit hours	3	
Contact hours	45	
Mode of delivery	CLASSROOM LECTURES	
Mode of assessment		WEIGHT%
Continuous assessment		30%
Final examination		70%
Total		100%
Course lecturers and Instructors	MR. BAMIDELE OLADAPO -LECTURER	
Course description	<p>Environmental Microbiology is a course that delves into the dynamic interactions between microorganisms and their surrounding environment. This course explores the pivotal roles microorganisms play in shaping ecosystems, nutrient cycles, pollution mitigation, and public health. Students will study the diversity, adaptation, and functions of microorganisms in various environmental niches, fostering a deep understanding of their impact on both natural and anthropogenic processes.</p>	
Course objectives	<p>This course will make it possible to understand</p> <ol style="list-style-type: none"> 1. The importance of microorganism in the environment and the roles they play 2. The various types of interactions that exist between microorganisms and other organisms in the environment 3. Microbial involvement in carbon, nitrogen, sulfur, and phosphorus cycles 4. The significance and involvement of microorganisms in upholding environmental equilibrium and promoting the health of the ecosystem 5. Application of microorganisms in liquid and solid waste management and treatment. 	

	<ol style="list-style-type: none"> 6. The application of microbes in environmental remediation. 7. Understanding the use of microbial indicators to assess water quality and environmental contamination.
Learning outcomes	<p>By the end of the course, students will be able to:</p> <ol style="list-style-type: none"> 1. Explain importance of microorganism in the environment and the roles they play 2. Enumerate and describe various types of interactions that exist between microorganisms and other organisms in the environment 3. Understand and explain microbial involvement in carbon, nitrogen, sulfur, and phosphorus cycles 4. Explain significance and involvement of microorganisms in upholding environmental equilibrium and promoting the health of the ecosystem 5. Describe the application of microorganisms in liquid and solid waste management and treatment. 6. Explain the application of microbes in environmental remediation. 7. Understand and explain the use of microbial indicators to assess water quality and environmental contamination.
Teaching and learning	The class will meet for three hours a week.
Detailed course content	<p>Microorganisms and their Habitats. Microbial Interactions: Mutualism, synergism, commensalism, competition, amensalism, parasitism, predation; Microbe-Plant interaction; Microbe-animal interaction; luminescent bacteria.</p> <p>Biogeochemical Cycling. Waste Management: Solid Waste management and disposal. Liquid waste management.</p> <p>Microbial Bioremediation, Water Potability: Treatment and safety of drinking (potable) water, methods to detect potability of water samples.</p>
Course content sequencing	
Weeks	
Week 1	Microorganisms and their Habitats. Microbial Interactions: Mutualism, synergism, commensalism, competition, amensalism, parasitism, predation
Week 2	Microbe-Plant interaction; Microbe-animal interaction; luminescent bacteria

Week 3	Continuous Assessment 1
Week 4 – 5	Biogeochemical Cycling
Week 6	Waste Management: Solid Waste management and disposal.
Week 7	Liquid waste management.
Week 8	Microbial Bioremediation
Week 9	Continuous Assessment 2
Week 10 – 11	Water Potability: Treatment and safety of drinking(potable) water, methods to detect potability of water samples.
Week 12	Revision
Recommended reading material	
<ol style="list-style-type: none"> 1. Joanne Willey and Kathleen Sandman and Dorothy Wood (2020). Prescott's Microbiology. McGraw-Hill Higher Education 2. Michael T. Madigan, Kelly S. Bender, Daniel H. Buckley W. Matthew Sattley and David A. Stahl (2019). Brock Biology of Microorganisms. Pearson Educational Limited 	

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Course title: ENVIRONMENTAL MICROBIOLOGY

Preamble: This course unravels the microscopic world that shapes our planet's health and balance. Uncover the hidden interactions, adaptations, and transformative powers of microorganisms within diverse ecosystems. From nutrient cycles to pollution control, exploring how these tiny life forms wield significant influence on our environment and its sustainability.

Specific course objectives/learning outcomes.

The course will enable the understanding of the following:

1. The importance of microorganism in the environment and the roles they play
2. The various types of interactions that exist between microorganisms and other organisms in the environment
3. Microbial involvement in carbon, nitrogen, sulfur, and phosphorus cycles
4. The significance and involvement of microorganisms in upholding environmental equilibrium and promoting the health of the ecosystem
5. Application of microorganisms in liquid and solid waste management and treatment.
6. The application of microbes in environmental remediation.

7. Understanding the use of microbial indicators to assess water quality and environmental contamination.

Learning activities/Course delivery methods

1. Lectures: detailed content of course are taught in class
2. Laboratory Sessions: the practical application of the course is demonstrated in the laboratory

Course content: Microorganisms and their Habitats. Microbial Interactions: Mutualism, synergism, commensalism, competition, amensalism, parasitism, predation; Microbe-Plant interaction; Microbe-animal interaction; luminescent bacteria. Biogeochemical Cycling. Waste Management: Solid Waste management and disposal. Liquid waste management. Microbial Bioremediation, Water Potability: Treatment and safety of drinking(potable) water, methods to detect potability of water samples.