THOMAS ADEWUMI UNIVERSITY OKO COURSE OUTLINE		
Faculty	COMPUTING AND APPLIED SCIENCES	
Department	BIOLOGICAL SCIENCES	
Course title	**MICROBIAL ECOLOGY**	
Year of study	4	
Course code	MCB 401	
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	Microbial ecology is the study of microorganisms in their natural environments and their interactions with each other and their surroundings. This field explores how bacteria, archaea, viruses, and other microscopic organisms influence ecosystem processes, nutrient cycling, and even human health. By investigating the diversity, dynamics, and functions of microbial communities, microbial ecology provides insights into the intricate relationships that shape the world at a microscopic level.	
Course objectives	This course will make it possible to understand 1. The fundamental principles of microbial ecology, including microbial diversity, interactions, community dynamics, and their roles in ecosystem processes. 2. The composition and structure of microbial communities. 3. The roles of microorganisms in essential biogeochemical cycles such as carbon, nitrogen, and phosphorus cycles 4. How microbial activities impact ecosystem functioning. 5. Various types of microbial interactions, including symbiosis, competition, etc. 6. The implications of microbial communities on human health. 7. The impact of environmental factors like temperature, pH, and anthropogenic activities on shaping microbial communities. 8. The practical applications of microbial ecology, such as bioremediation, agriculture, and wastewater treatment.	
Learning outcomes	This course will make it possible to understand	

	1. Comprehend the fundamental principles of microbial ecology, including microbial diversity, interactions, community dynamics, and their roles in ecosystem processes. 2. Describe the composition and structure of microbial communities. 3. Explain the roles of microorganisms in essential biogeochemical cycles such as carbon, nitrogen, and phosphorus cycles 4. Understand how microbial activities impact ecosystem functioning. 5. Identify and differentiate the various types of microbial interactions, including symbiosis, competition, etc. 6. Understand the implications of microbial communities on human health. 7. Explain the impact of environmental factors like temperature, pH, and anthropogenic activities on shaping microbial communities. 8. Describe the practical applications of microbial ecology, such as bioremediation, agriculture, and wastewater treatment.
Teaching and learning	The class will meet for three hours a week. It will be teaching only sessions.
Detailed course content	Microbial and ecological theory. Physiological, morphological and genetic adaptations of micro-organisms to their environment. Microbial interactions; micro-organisms in natural ecosystems. The life of micro-organisms in air, springs, rivers, lakes and seas. Cycling of elements in water and sediments.
Course content sequencing	
Weeks	
Week 1 – 2	Microbial and ecological theory. Physiological, morphological and genetic adaptations of micro-organisms to their environment.
Week 3 – 4	Microbial interactions; micro-organisms in natural ecosystems.
Week 5	Continuous Assessment 1
Week 6 – 7	The life of micro-organisms in air, springs, rivers, lakes and seas.
Week 8	Continuous Assessment 2
Week 9 – 11	Cycling of elements in water and sediments.
Week 12	Revision
Recommended reading material	

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 Education Limited
3. David L. Kirchman. Processes in Microbial Ecology (2012). Oxford University Press
4. Larry L. Barton and Diana E. Northup (2011). Microbial Ecology. John Wiley and Sons Publishers

Course code: MCB 401

Course title: MICROBIAL ECOLOGY

Preamble: Microbial ecology is the study of microorganisms in their natural environments and their interactions with each other and their surroundings. This field explores how bacteria, archaea, viruses, and other microscopic organisms influence ecosystem processes, nutrient cycling, and even human health.

Specific course objectives/learning outcomes.

This course will make it possible to understand

1. The fundamental principles of microbial ecology, including microbial diversity, interactions, community dynamics, and their roles in ecosystem processes.
2. The composition and structure of microbial communities.
3. The roles of microorganisms in essential biogeochemical cycles such as carbon, nitrogen, and phosphorus cycles
4. How microbial activities impact ecosystem functioning.
5. Various types of microbial interactions, including symbiosis, competition, etc.
6. The implications of microbial communities on human health.
7. The impact of environmental factors like temperature, pH, and anthropogenic activities on shaping microbial communities.
8. The practical applications of microbial ecology, such as bioremediation, agriculture, and wastewater treatment.

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: Microbial and ecological theory. Physiological, morphological and genetic adaptations of micro-organisms to their environment. Microbial interactions; micro-organisms in

natural ecosystems. The life of micro-organisms in air, springs, rivers, lakes and seas. Cycling of elements in water and sediments.