THOMAS ADEWUMI UNIVERSITY OKO COURSE OUTLINE		
Faculty	Computing and applied sciences	
Department	Biological Sciences	
Course title	**MICROBIOLOGICAL TECHNIQUES**	
Year of study	2	
Course code	MCB 231	
Credit unit	2	
Contact hours	**90**	
Mode of delivery	PRACTICALS	
Mode of assessment		WEIGHT%
Continuous assessment		30%
Final examination		70%
Total		100%
Course lecturers and Instructors	MRS F.J. OLAITAN-LECTURER	
Course description	There are several microbiology techniques and procedures specially developed over the years to study and understand the metabolic processes, genetics, functions, and interaction of microbes with other organisms. The methodologies mostly involve techniques for culturing, identification, isolation, staining, and engineering these tiny organisms. Given the myriad uses of microbiology and its basic techniques, this course presents a demonstration of the basic microbiological laboratory techniques.	
Course objectives	This course will enable students to have an hands-on experience of: 1. how to culture microorganisms 2. ways of preparing culture media for microbial growth. 3. several procedures employed in isolation of pure culture 4. the staining techniques for differentiation of microorganisms.	

	5. how to enumerate microorganisms directly and indirectly. 6. ways to identify and characterize microorganisms
Learning outcomes	By the end of the course, students will be able to: 1. Culture different microorganisms 2. Prepare different culture media for microbial growth. 3. Isolate pure culture from a mixed population using streaking and pour plates sub-culturing procedures. 4. Use several staining techniques for differentiation of microorganisms. 5. Enumerate microorganisms using direct and indirect procedures. 6. Identifiy microorganisms with their colonial and cellular morphology and biochemical procedures.
Teaching and learning	Practical will hold for three hours a week.
Detailed course content	Culturing of microorganisms, preparation of media for microbial growth. Isolation of pure culture, streaking, pour plates sub-culturing procedures. Staining techniques for differentiation of microorganisms. Enumeration of microorganisms, direct and indirect procedures. Identification of microorganisms to include colonial and cellular morphology and biochemical procedures.
Course content sequencing	
Weeks	
Week 1	**Introduction to the Laboratory**
Week 2 & 3	**Safety in the Laboratory**
Week 4	**List of equipment / apparatus used in microbiology laboratory**
Week 5 & 6	**Microscopy**
Week 7	**Methods of sterilization and disinfection**
Week 8	**Collection and preservation of samples for microbiological analyses**
Week 9	**Culture media preparation**
Week 10	**Isolation, purification and preservation of microorganisms**

Week 11	**Counting of colonies**
Week 12	**Staining techniques**

Recommended reading material

1 Joanne Willey and Kathleen Sandman and Dorothy Wood (2020). Prescott's Microbiology. 11th Edition.

2 Gary Kaiser Microbiology Labs II. LibreTexts

3 Joan Petersen (2016).Laboratory Exercises in Microbiology: Discoobiology: Discovering the Unseen World Through Hands-On Investigation .CUNY Queensborough Community College Susan McLaughlin CUNY Queensborough Community College City University of New York (CUNY) CUNY Academic Works

4 Tiwari R. P.; Hoondal G. S. And Tewari R. (2009). Laboratory techniques in microbiology & biotechnology. Departments of Microbiology and Biotechnology, Pan jab University, Chandigarh

Course code: MCB 231

Course title: MICROBIOLOGICAL TECHNIQUES

Preamble: the essence of teaching the course is aimed at demonstrating different microbiological techniques employed in the microbiological laboratory. The experience gained will enable the students to understand what it is expected to be known as a microbiologist in training and also afford them to develop to work independently with little supervision.

Specific course objectives/learning outcomes.

The course will enable the understanding of the following:

1. Culture different microorganisms

2. Prepare different culture media for microbial growth.

3. Isolate pure culture from a mixed population using streaking and pour plates sub-culturing procedures.

4. Use several staining techniques for differentiation of microorganisms.

5. Enumerate microorganisms using direct and indirect procedures.

6. Identifiy microorganisms with their colonial and cellular morphology and biochemical procedures.

Learning activities/Course delivery methods

Lectures: detailed content of course are taught in class

Course content: Culturing of microorganisms, preparation of media for microbial growth. Isolation of pure culture, streaking, pour plates sub-culturing procedures. Staining techniques for differentiation of microorganisms. Enumeration of microorganisms, direct and indirect procedures. Identification of microorganisms to include colonial and cellular morphology and biochemical procedures.