

<b>Semester</b>	3		
<b>Course Code:</b>	MIBI 21522		
<b>Course Name:</b>	Laboratory aspects of Microbial Biochemistry and Physiology, Bacterial Genetics		
<b>Credit Value:</b>	2		
<b>Core/Optional</b>	Core		
<b>Hourly Breakdown</b>	Theory	Practical	Independent Learning
	-	70 hrs	30 hrs
<b>Course Aim/Intended Learning Outcomes:</b> Upon successful completion of this course student will be able to;			
<ul style="list-style-type: none"> <li>Analyze the biologically important components in the laboratory,</li> <li>Demonstrate some physiological activities of microorganisms,</li> <li>Demonstrate the potential usage of some microbial metabolic activities/processes in industries and</li> <li>Perform basic genetic experiments in order to verify the main principles in bacterial genetics.</li> </ul>			
<b>Course Content:</b>			
<b>Microbial Biochemistry and Physiology:</b> Factors influencing microbial growth, Oxygen requirements of microorganisms, Oligo-dynamic Action, Determination of presence of sugars in given substrates, Nelsons colorimetric Determination of Sugars, Estimation of glucose by Iodine oxidation in alkaline conditions, Determination of the presence of amino acids and proteins in given substrates, Effects of temperature on the activity of $\alpha$ - amylase, Enzyme Assay, Pigment production by bacteria, Observation of Pasteur effect in <i>E. coli</i> .			
<b>Bacterial Genetics:</b> Preparation of bacterial Genomic DNA, Preparation of bacterial plasmid DNA, Digestion of DNA and analysis of the digestions by Gel electrophoresis: Restricted Fragment Length Polymorphism (RFLP) analysis, Bacterial transformation and cloning of DNA, Polymerase Chain Reaction (PCR) for the detection of bacterial species, Screening for antibiotic resistant bacteria.			
<b>Teaching /Learning Methods:</b> A combination of laboratory exercises and demonstration classes			
<b>Assessment Strategy:</b> Continuous assessment and end of the course unit examination.			
<b>Continuous Assessment</b> 10%		<b>Final Assessment</b> 90%	
Details: Laboratory Reports: 10%	Theory (%) -	Practical (%) 90	Other (%) -
<b>Recommended Reading:</b>			
<ul style="list-style-type: none"> <li>Anderson, P and Ganetzky, B. (1997). <i>An electronic companion to genetics workbook</i>. Cogito Learning Media, Inc., New York</li> <li>John G. Holt (1994) <i>Bergy's Manual of Determinative Bacteriology</i>. Williams &amp; Wilkins, Baltimore</li> <li>Sambrook, J., Fritsch, E.F and Maniatis, T. (1989). <i>Molecular Cloning- A Laboratory Manual</i>. Vol. 1, 2, and 3. Cold Spring Harbor.</li> </ul>			