

<b>Semester</b>	2		
<b>Course Code:</b>	MIBI 12522		
<b>Course Name:</b>	Laboratory Techniques on taxonomy of Bacteria, Virus and Fungi		
<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>• Perform the laboratory experiments on cultural and molecular methods used in the classification of bacteria,</li> <li>• Identification of an unknown bacterium up to species level based on the cultural as well as molecular tests performed in the laboratory,</li> <li>• Isolate fungi from different sources using selective media for fungi,</li> <li>• Describe specific characteristic of fungi that are considered in formulating selective media for fungi,</li> <li>• Stain, observe and identify basic vegetative and reproductive structures of fungi belonged each subdivision,</li> <li>• Culture and identify fungi using slide culture technique and</li> <li>• Develop skills in basic techniques used for the identification and enumeration of viruses.</li> </ul>			
<b>Course Content:</b>			
Enumeration of bacteria, Quantitative estimation of Microbial growth, the Biochemical examination of Bacteria, Identification of characteristic compound, Identification of unknown bacteria.			
Isolation of fungi from different sources. Making media selective for fungi. Staining fungal isolate and microscopic observation of them for basic morphological features of vegetative and reproductive structures. Observing cabbage root infected by <i>Plasmodiophora brassicae</i> and zygospores. Observing vegetative and reproductive structures of the members of the subdivision Ascomycotina Asci, ascocarps; cleistothecia, perithecia and apothecia, Observing reproductive structures of the members of the subdivision Basidiomycotina – Mushrooms, Brackets, Earthstar, Puffballs. Observing some of other reproductive structures of fungi – pycnidium.			
Methods used for the detection and enumeration of viruses: principles of electron microscopy, enumeration of bacteriophages using plaque assays, Study on the viral life cycle – One-step growth curve of bacteriophages, Detection of viruses using Enzyme-linked Immunosorbent Assay (ELISA) technique.			
<b>Teaching /Learning Methods:</b> Laboratory exercises and computer-assisted learning methods			
<b>Assessment Strategy:</b> Laboratory reports and end of course unit laboratory 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>• Tortora, G.J., Funke, B.R. and Case, C.L. (2010) <i>Microbiology: An Introduction</i>. 10<sup>th</sup> Edition. Pearson Education.</li> <li>• Willey, J.M., Sherwood, L.M. and Woolverton, C.J. (2008) <i>Prescott, Harley, and Klein's Microbiology</i>. 7<sup>th</sup> edition. McGraw-Hill Companies, Inc.</li> <li>• Deacon, J., (2004) <i>Fungal Biology</i>. 4<sup>th</sup> Edition. Blackwell Science.</li> <li>• Dimmock, N.J., Easton, A.J. and Leppard, K.N. (2016). <i>Introduction to Modern Virology</i>. 7<sup>th</sup> ed. Wiley-Blackwell.</li> <li>• 'ViralZone' by SIB: Swiss Institute of Bioinformatics - <a href="http://www.expasy.org/viralzone">www.expasy.org/viralzone</a></li> <li>• 'Virus Taxonomy Release' of the current year by the International Committee on Taxonomy of Viruses - <a href="https://talk.ictvonline.org/taxonomy">https://talk.ictvonline.org/taxonomy</a></li> </ul>			