

**Name of the Program: M.Sc. Marine Microbiology**

**Course Code: MMI-605**

**Title of the Course: Microbial Growth and Enzyme Kinetics Practical**

**Number of Credits: 01**

**Effective from AY: 2022 - 23**

<b>Prerequisites for the course:</b>	Students should have undergone M.Sc. Marine Microbiology/Marine Biotechnology Part I Courses.	
<b>Objective:</b>	To understand microbial growth and enzyme kinetics.	
<b>Content:</b>	<b>Module I</b> 1. Growth kinetics – bacterium/yeast and determination of $\mu_{\max}$ , $K_s$ , $Y_{x/s}$ , $m$ (15 hrs, Ref. 1-4). 2. Enzyme kinetics - Purification of enzyme: salting out, dialysis, gel filtration, assay of enzyme activity, rate of reaction, determination of specific activity, $K_m$ , $V_{\max}$ (15 hrs, Ref. 1-2, 5-6).	30 hrs.
<b>Pedagogy:</b>	Laboratory experiments/ tutorials.	
<b>References/ Readings:</b>	<ol style="list-style-type: none"><li>1. Hegyi, G., Kardos, J., Kovács, M., Málnási-Csizmadia, A., Nyitray, L., Pál, G., Radnai, L., Reményi, A., &amp; Venekei, I. (2013). <i>Introduction to practical biochemistry</i>. E-book. <a href="http://www.renderx.com">www.renderx.com</a></li><li>2. Plummer, M. U., &amp; Plummer, D. T. (2008). <i>An introduction to practical biochemistry</i>. (Third Edition), New Delhi: Tata Mc Graw Hill Publishing Company.</li><li>3. Stanbury, P. F., Whitaker, A., &amp; Hall, S. J. (2005). <i>Principles of fermentation technology</i>. (Third Edition). Butterworth-Heinemann Publishers.</li><li>4. Flickinger, M. C., &amp; Drew, S. W. (2002). <i>The encyclopedia of bioprocess technology: Fermentation, biocatalysis and bioseparation</i>. Vols. 1 - 5, New Jersey: John Wiley Publishers.</li><li>5. Lehninger, A. L., Nelson, D. L., &amp; Cox, M. M. (2008). <i>Principles of biochemistry</i>. (Fifth Edition), New York: Worth Publishers.</li><li>6. Dixon, M., &amp; Webb, E. C. (2014). <i>Enzymes</i>. (Second Edition), Elsevier.</li></ol>	
<b>Course Outcomes:</b>	<ol style="list-style-type: none"><li>1. Estimate microbial growth in different nutrient conditions.</li><li>2. Formulate experiment to calculate growth rate and enzyme activity under any given condition.</li></ol>	