

Course Code: MMPC-418

Title of the Course: Techniques and Instrumentation in Microbiology - Practical

Number of Credits: 01

Prerequisites for the course:	The student should be familiar with the concepts in basic chemistry and should be able to use basic instruments in Microbiology.	
Objective:	This course develops the skills for techniques and instrumentation in microbiology.	
Content:	1. Microscopy – compound, phase contrast – of bacterial, fungal cells (3 hrs; Ref 1) 2. Density gradient separation of mixed bacterial and/or yeast cells. (3 hrs; Ref 1) 3. Cell disruption of pigmented bacteria/yeast by sonicator, efficacy of sonication and pigment profiling using UV-visible spectrophotometer. (9 hrs; Ref 1-5) 4. Polyacrylamide gel electrophoresis (PAGE) (12 hrs; Ref 1-5) 5. Demonstration of molecular exclusion chromatography (3 hrs; Ref 5)	30 hrs
Pedagogy:	Experiments in the laboratory	
References/ Readings:	1. Wilson, K. and Walker, J. (2013). Principles and Techniques of Biochemistry and Molecular Biology, Cambridge University Press, N.Y., USA. 2. Cooper, T. G. (2011). The Tools of Biochemistry, Wiley India Pvt. Ltd., Noida. 3. Goswami, C., Paintal, A. and Narain, R. (2011). Handbook of Bioinstrumentation, Wisdom Press, New Delhi. 4. Parakhia, M. V., Tomar, R. S., Patel, S. and Golakiya, B. A. (2010). Molecular Biology and Biotechnology: Microbial Methods, NIPA New Delhi, Pitampura. 5. Jayaraman, J. (2011). Laboratory Manual in Biochemistry, New Age International Publishers, New Delhi.	
Learning Outcomes:	Ability to use techniques and instruments for carrying out microbiological research work or in the industries	