

Semester	AUG 2022
Open to semester	5,7,11,13,21
Course code	<b>BI3344/BI6374</b>
Course title	<b>Microbial Genetics</b>
Credits	4 /4
Course Coordinator & participating faculty (if any)	Sunish Radhakrishnan*, Mridula Nambiar
Nature of Course	Lectures
Pre-requisites	Basic understanding in Microbiology, Molecular Biology and Genetics
Objectives (goals, type of students for whom useful, outcome etc)	The goal of this course is to understand the transmission of heritable traits by microbes and the methods and principles used to study inheritance. This course will build upon the basics and concepts in genetics and introduce advanced concepts. Emphasis will be laid on providing a deeper understanding of the microbial genome using primarily bacteria and yeast as model organisms as well as to discuss modern tools and techniques currently used.
Course contents (details of topics /sections with no. of lectures for each)	<p>Module 1 –  Bacterial chromosome structure and replication,  Mutations and repair in bacteria,  Transposition, Mapping of mutations, Bacterial two-hybrid systems, Genetics of bacteriophages, Conjugation, Transformation, Transduction as a tool in bacterial genetics, Recombination, Gene expression and transcriptional regulation in bacteria, Post-transcriptional regulation in bacteria.</p> <p>Module 2 –  Yeast chromosome structure, Complementation, Meiosis, Tetrad analysis, Homology mediated recombination and its regulation during mitosis and meiosis, Chromatin and transcriptional regulation, Molecular genetic tools in yeast, Yeast two-hybrid systems, Genetic screens</p>
Evaluation /assessment	End-Sem Examination-30% Mid-Sem Examination-30% Others-40 %

Suggested readings (with full list of authors, publisher, year, edn etc.)	<ol style="list-style-type: none"><li>1. Microbial Genetics by David Freifelder</li><li>2. Fundamental Bacterial Genetics by Nancy Trun and Janine Trempy</li><li>3. Research and review articles suggested during the course</li></ol>
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