

## IISER Pune - Course Content

Semester	JAN 2024
Open to Semester	4
Course Code	BI2233
Course title	Genetics (E )
Nature of Course	LT - lecture and Tutorial
Credit	3
<b>Coordinator</b> and participating faculty (if any)	<b>Dr. Mridula Nambiar</b> Dr. Richa Rikhy
Pre-requisites	1st year Biology courses
Objectives	The goal of this course is to build upon basic Genetics, which the students learnt in their high school and the first few semesters at IISER-Pune. This course will help revise basic concepts and then introduce advanced concepts. A strong emphasis will be laid on modern tools and techniques as well as the utility of model organisms.
Course content	<p>1) Mendelian Genetics : Genetic interactions, Alleles, Mutations</p> <p>2) Non-Mendelian Genetics: Linkage, Incomplete Dominance, Maternal Inheritance, Sex-linked inheritance, Sex determination, Dosage Compensation, Genomic imprinting</p> <p>3) The Chromosomal basis of inheritance, Genetic Complementation and Mapping, Recombination</p> <p>4) Bacterial and fungal genetics, Transposons, Vertical and Horizontal gene transfer.</p> <p>5) Genetic screens as a basis for functional genomics, Mutagenesis screens, FLP-FRT &amp; Cre- Lox Systems.</p> <p>6) Gene isolation, manipulation and the techniques that revolutionized modern genetics.</p> <p>The utility of various model organisms such as bacteria, yeast, fungi, worms, flies, plants and animals will be discussed at different points during the course.</p>
Evaluation / Assessment	<p>End-Sem Examination - 40%</p> <p>Mid-Sem Examination - 40%</p> <p>Others (Quizzes or assignments) - 10% + 10%</p>
Suggested readings	<p>Introduction to Genetic Analysis by Griffiths et. al. (latest edition)</p> <p>Principles of Genetics by Gardner et. al. (latest edition)</p> <p>Review and research articles provided during the course</p>

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When Next	January 2025
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