



## Syllabus

**Term:** 2026/27/1      **Subject name:** Basic Genetics - lecture      **Subject code:** ENBIOB3201

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**Unit (Unit code)** (BIOLOGIA)

**Lecturer responsible for the course:** Dr. HOFFMANN Gyula

**Requirement:** Exam

**Classes per week :** 3/0/0

**Classes per term:** 39/0/0

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### Purpose of education:

Extensions to Mendelian inheritance: different forms of dominance, multiple allelism, lethality. Gene interactions. Penetrance and expressivity. Linkage. Linkage maps. Mapping on the X chromosome. Map function. Early experiments proving the nature of crossing over. Three point mapping. Mitotic segregation and mitotic recombination. Chromosome rearrangements. Change in the number of chromosomes. Genetics of quantitative characters.

One gene-one enzyme hypothesis. Classification of gene mutations. Mutation detection systems. Mutation induction. Mutations and genetic analysis. Molecular basis of mutations. DNA repair: strategies and mechanisms. Information transfer in bacteria. Gene regulation in prokaryotes: the lac-, and trp operons. Genomes and eukaryote gene regulation. DNA and information. Mechanisms of recombination. Extranuclear genomes. Transposable genetic elements. Extensions to Mendelian inheritance: different forms of dominance, multiple allelism, lethality. Gene interactions. Penetrance and expressivity. Linkage. Linkage maps. Mapping on the X chromosome. Map function. Early experiments proving the nature of crossing over. Three point mapping. Mitotic segregation and mitotic recombination. Chromosome rearrangements. Change in the number of chromosomes. Genetics of quantitative characters. One gene-one enzyme hypothesis. Classification of gene mutations. Mutation detection systems. Mutation induction. Mutations and genetic analysis. Molecular basis of mutations. DNA repair: strategies and mechanisms. Information transfer in bacteria. Gene regulation in prokaryotes: the lac-, and trp operons. Genomes and eukaryote gene regulation. DNA and information. Mechanisms of recombination. Extranuclear genomes. Transposable genetic elements.

### Contents:

1. week Techniques of genetical analysis. Genes and environment.
2. week Mendel's work.
3. week Chromosome theory. Inheritance of sex-linked characters.
4. week Extensions to Mendelian inheritance: different forms of dominance, multiple allelism, lethality. Gene interactions. Penetrance and expressivity.
5. week Linkage. Linkage maps. Mapping on the X chromosome. Map function. Early experiments proving the nature of crossing over. Three point mapping.



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### Contents:

6. week Mitotic segregation and mitotic recombination. Chromosome rearrangements. Change in the number of chromosomes. Genetics of quantitative characters.

7. week One gene-one enzyme hypothesis. Classification of gene mutations. Mutation detection systems. Mutation induction. Mutations and genetic analysis.

8. week Molecular basis of mutations. DNA repair: strategies and mechanisms.

9. week Information transfer in bacteria.

10. week Gene regulation in prokaryotes: the lac-, and trp operons.

11. weeks Genomes and eukaryote gene regulation. DNA and information.

12. week Mechanisms of recombination.

13. -14. week Extranuclear genomes. Transposable genetic elements.

### System of examining and valuation:

Oral exam

### Bibliography:

**An Introduction to Genetic Analysis, 7th edition** New York: [W. H. Freeman](#); 2000.,

Anthony JF Griffiths, Jeffrey H Miller, David T Suzuki, Richard C Lewontin, and William M Gelbart



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**Bibliography:**

OR ANY ADITION OF THIS BOOK

**Bibliography:**