

Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Department of Genetics and Bioengineering
 2026-2027 Fall Semester

Syllabus

Code/Name	GBE 203 / Genetics
Type	Required
Credit/ECTS	3/5
Hour per Week	3
Level/Year	Undergraduate/2
Semester	Fall
Classroom	D305
Content	Principles of Mendelian and non-Mendelian inheritance, chromosome transmission, gene interactions and linkage, genetic mapping and recombination, epigenetic inheritance, gene mutations and chromosomal variation, DNA repair, and population genetics.
Prerequisites	None
Textbooks	Primary Lecture Notes Supplementary GENETICS, 4th Edition, Robert J. Brooker GENETICS, 4th Edition, Daniel L. Hartl, Elizabeth W. Jones
Objectives	• Develop a fundamental understanding of genetic principles, including Mendelian inheritance, chromosome transmission, gene interactions, linkage, mutation, DNA repair, and population genetics. • Apply genetic concepts and quantitative approaches to analyze inheritance patterns, genetic crosses, pedigrees, linkage data, chromosome abnormalities, and allele-frequency changes. • Explain the molecular and chromosomal mechanisms underlying genetic variation and inheritance, including recombination, mutation, epigenetic inheritance, chromosome-number variation, and DNA repair. • Evaluate and interpret genetic data to understand relationships among genotype, phenotype, inheritance, genetic variation, and evolutionary processes.
Course Outcomes	In this course you will be able to: CO1 Explain the historical development and fundamental concepts of genetics, including genes, genomes, and genomic organization. CO2 Analyze genetic crosses, pedigrees, linkage data, and gene-interaction patterns to predict and interpret genotypic and phenotypic outcomes. CO3 Calculate and construct genetic maps using recombination frequencies and interpret the effects of crossing over and gene linkage on inheritance. CO4 Describe and evaluate the molecular and chromosomal mechanisms responsible for genetic variation, including gene mutation, chromosome-number variation, epigenetic inheritance, and DNA repair. CO5 Apply population-genetic principles to calculate and interpret allele and genotype frequencies and explain how mutation contributes to changes in populations.

Weekly Schedule of Topics

W	Topic
1	Introduction to the Course
2	Mendelian Inheritance

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3	Reproduction and Chromosome Transmission
4	Extensions of Mendelian Inheritance - I
5	Extensions of Mendelian Inheritance - II
6	Non-Mendelian Inheritance
7	Genetic Linkage
8	Genetic Mapping
9	Variation in Chromosome Structure and Number
10	Gene Mutation -I
11	Gene Mutation -II
12	DNA Repair
13	Population Genetics
14	Quantitative Genetics

**Professional
Contribution**

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	0	0	0	0	2	0	3	0	3	0	0
CO2	4	0	0	4	5	0	0	0	3	0	0
CO3	3	0	0	3	4	0	0	3	3	0	0
CO4	3	0	0	2	3	0	0	0	3	0	0
CO5	4	0	0	4	3	0	0	0	3	0	0

* Contribution Level | 0: None | 1: Very Low | 2: Low | 3: Medium | 4: High | 5: Very High

**Special
Conditions**

Requirements

Course Policy

- Be in the class on time.
- English should always be used to communicate with one another.
- At least 70% attendance is required, otherwise a grade of **DZ** will be assigned.

**Cheating &
Plagiarism**

- Copying or letting someone copy your work on exams, assignments, or reports is cheating.
- Cutting and pasting text, figures and tables from web sources or any other electronic source is plagiarism.
- The consequence of academic dishonesty is to receive a grade of **FF** for the course.

Evaluation

Midterm	40%
<u>Final Exam</u>	<u>60%</u>
Total	100%

Instructor

Name/Surname	Muhammet Ay	Email	muhammet.ay@alanya.edu.tr
Room	321	Office Hours	W 9:30-10:30 and W 13:30-14:30

Prepared by Muhammet Ay in September, 2026.