Alanya Alaaddin Keykubat University | Rafet Kayış Faculty of Engineering
Genetic and Bioengineering Department
2024-2025 Fall Semester

Syllabus

Code/Name	GBM 301.6 / Epigenetics
Type	Elective course
Credit/ECTS	5/5
Hour per Week	3 (3+0+0)
Level/Year	Undergraduate/3
Semester	Fall
Classroom	D305
Content	In the epigenetics course, the concept of epigenetics is introduced and is defined as heritable changes in gene expression that are, unlike mutations, not attributable to alterations in the sequence of DNA. The predominant epigenetic mechanisms, DNA methylation, modifications to chromatin structure, loss of imprinting, and non-coding RNA.
Prerequisites	
Textbooks	***Primary*** Class Notes ***Supplementary***
Objectives	● To learn and to define the concept of epigenetics and its transmission. ● To explain the circuit elements affecting the transcriptional mechanism. ● To discuss epigenetic mechanisms with specific examples. ● To define histone acetylation and DNA methylation and their place in epigenetics. ● To explain silencing mechanisms at the transcriptional level. ● To select techniques that can analyze the relationship between epigenetics and human diseases.
Course Outcomes	In this course you will be able to: CO1 Outline the epigenetics concepts. CO2 Outline the scope and applications of epigenetics. CO3 Classify epigenetic mechanisms. CO4 Improve problem solving ability. CO5 Practice professional responsibilities and ethics.

Weekly Schedule of Topics

W	Topic
1	Introduction to epigenetic
2	Gene circuit elements
3	RNA polymerase and the basics of gene control
4	Epigenetics and Inheritance
5	Chromatin and chromosome architecture
6	Histone modifications
7	Dynamics of opening and closing of chromatin
8	Chromatin stability and gene isolation
9	Nucleus architecture
10	Epigenetic mechanisms

11	DNA methylation and epigenetic programming mechanisms
12	RNA interference
13	Epigenetic memory
14	Epigenetics and human diseases

Professional Contribution	Understand the field of epigenetic and its applications

Contribution to Program Outcomes*

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	4	3	1	5	4	3	1	3	2	3	5
CO2	4	4	1	5	5	3	1	3	4	3	5
CO3	4	4	1	4	5	3	1	3	2	3	5
CO4	0	0	3	1	3	3	2	3	4	4	5
CO5	0	0	1	1	1	3	4	3	5	1	4

* 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 be used to communicate with one another. ● Mobile phone should be switched off and put away during the class. ● 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 50% Final Exam 50% Total 100%
Rubric	A rubric will be announced prior to exams.

Instructor

Name/Surname	Aslı Giray	Email	asli.giray@alanya.edu.tr
Room		Office Hours	W 11.30-12.30 | T 13.30-14.30

Prepared by Aslı Giray.