IZMIR INSTITUTE OF TECHNOLOGY
DEPARTMENT OF MOLECULAR BIOLOGY AND GENETICS

MBG 401: Recombinant DNA Thecnologies
Fall 2024-2025

Instructor: Asst. Prof. Şerife Ayaz Güner E-mail: serifeayaz@iyte.edu.tr
Office: D309
Office Hours: Wednesday 15:00 – 16:00
Course days and hours: Monday @13:30-16:15

Learning Objectives:
By the end of this course, students will be able to:

- Understand and apply the fundamental terminology and concepts of recombinant DNA technology.
- Utilize essential techniques in recombinant DNA technology for experimental design and problem-solving.
- Critically evaluate scientific literature related to recombinant DNA technology.
- Develop skills in group collaboration, project management, and effective presentation.
- Identify and apply recombinant DNA tools to address real-world challenges.
- Explore the broader impacts of recombinant DNA technology in areas such as health and agriculture.

Learning Outcomes:
Students completing this course will:

- Demonstrate proficiency in the terminology and fundamental techniques of recombinant DNA technology.
- Apply recombinant DNA technology to solve everyday problems.
- Evaluate and critique scientific publications relevant to recombinant DNA technology with respect to specific objectives.
- Assess the quality and suitability of recombinant DNA tools for research purposes.
- Work effectively in a group to design, conduct, and report on a research project.
- Prepare and deliver a well-structured oral presentation on a research proposal.
- Understand the applications of recombinant DNA technologies in addressing global challenges such as health and food security.

RESOURCES: Textbook and research articles.
Textbook: Gene Cloning and DNA Analysis: An Introduction (by T.A. Brown)

COURSE POLICIES

Late Submissions	All of the assignments are due at the scheduled dates and times. Please mark your calendar for all due dates (especially project timeline) and follow the announcements about the assignments. **Late assignments receive a 10% deduction for each day they are late. After three days, the assignments will not be accepted.**
Group Presentations	The groups will choose one article and present in the classroom.
Communication	Please check your **TEAMS (XXX)** for the announcements. All of the messages and announcements will be sent via TEAMS or your IZTECH e-mail addresses. Therefore, it is the responsibility of every student to read his/her official university email address and check the TEAMS regularly.
Attendance Policy	Student absences in excess of 3 weeks (4 or more) of classes will result in automatic failure in the course.

	Students with medical reports, you need to submit the paperwork to your deanship of faculty in 5 days following the last day of the sick leave.
Academic Integrity	Students are obliged to refrain from acts that they know or, under the circumstances, have reason to believe, will impair the integrity of the university or others. Violations of academic integrity include, but are not limited to, cheating, plagiarism, unauthorized multiple submissions or copying and using somebody else's paper/assignment. Any of these violations will be investigated by the discipline committee and may cause expulsion of the student from the University.
Ethical Rules	• English should be used at all times to communicate with one another during the class • Distractive tools such as cell phones must be turned off and put away • Please be prepared, having read, written, watched and studied the assigned lessons, articles, passages, or videos before the course sessions. • Please be ready to submit assignments on time • And most importantly please prepare to work cooperatively with other students.
Flexibility	A tentative schedule for the entire semester is included in this syllabus. Although much thought and planning were put into the course schedule included in the syllabus, the schedule is tentative and subject to change as necessary to adapt to the specific needs of the class. Additional readings, assignments, and activities, may be announced in class or via TEAMS during the semester.
Feedback	Your comments and suggestions are very important and will be taken into consideration during the course. Please do not hesitate to provide feedback about the course. You can give your feedback during the class, at office hours, or through e-mail.

ASSESSMENT

Evaluation Criteria	**Weight** (%)
Assignments (2 Assignments)	10%
Midterm	25%
Research Proposal (report)	15%
Article Presentation (Group Activity)	10%
Active Participation	5%
Final Exam	35%
Total	100%

WEEKLY SCHEDULE

Week		**Topic**
Week 1		Introduction to the course (Chp 1)
Week 2		Vectors and gene cloning (Chp 2)
Week 3		Purification of DNA from living cells (Chp 3) Manipulation Enzymes (Chp 4)
Week 4		Introduction of vectors into living cells (Chp 5)
Week 5		Cloning vectors (Chp 6, Chp 7)
Week 6		How to obtain specific clones (Chp 8)
Week 7		PCR (Chp 9) and Midterm

Week 8		Screening and sequencing techniques (Chp 10)
Week 9		Studying gene expression and function (Chp 11)
Week 10		Gene manipulation
Week 11		Recombinant proteins (Chp 14)
Week 12		Medical applications (Chp 15)
Week 13		Agriculture applications (Chp 16)
Week 14	**15/06**	Forensic Science and Archeology (Chp 17)
		Final Exam Week