



2025-2026 Academic Year
List of Courses Offered in Foreign Language
2025-2026 Akademik Yılı
Yabancı Dilde Açılacak Dersler Listesi

Faculty of Agriculture
Ziraat Fakültesi

	Department <i>Bölüm</i>	Course Code <i>Ders Kodu</i>	ECTS <i>AKTS</i>	Course Title <i>Dersin Adı</i>	Semester <i>Dönem</i>	Course Content <i>Dersin İçeriği</i>	Academic Staff <i>Dersi Veren Öğretim Elemanı</i>	Online Available <i>Çevrimiçi</i>
1	Agricultural Biotechnology	BTB 101	8	Introduction to Biotechnology	Fall	This course provides an overview of the fundamental principles and applications of biotechnology. It begins with basic biological concepts, including DNA, RNA, proteins, and enzymes, to establish a foundational understanding. Students are introduced to core biotechnological methods such as DNA extraction, gel electrophoresis, and polymerase chain reaction (PCR). The course explores how these techniques are used in agriculture, medicine, and environmental science. Students also learn to access biological databases and interpret scientific literature related to biotechnology. The course combines lectures with introductory-level practical sessions and concludes with a basic project or presentation demonstrating the real-world application of a biotechnological concept.	Assoc. Prof. Dr. Demir Özdemir	NA
2	Agricultural Biotechnology	BTB 201	8	Plant Physiology I	Fall	This course offers all aspects of plant physiology. Photosynthesis, stress physiology, plant-water relationship, plant nutrient synthesis and uptake are some of the main subjects of the course.	Prof. Dr. Songül Sever Mutlu	NA
3	Agricultural Biotechnology	BTB 202	8	Molecular Biology I	Spring	Structure and Functions of DNA, Chromosomes, DNA Replication, Transcription, Post-transcriptional modifications, Repair and Recombination, Gene Expression and Regulation	Assoc. Prof. Dr. Aysun Özçelik	NA
4	Agricultural Biotechnology	BTB 204	8	Biochemistry	Spring	Introduction to biochemistry, biomolecules and cell structure, properties of water and aqueous solutions, proteins, enzymes, carbohydrates, lipids, nucleic acids, vitamins, carbohydrate metabolism, lipid metabolism, nitrogen compounds metabolism.	Assoc. Prof. Dr. Aysun Özçelik	NA
5	Agricultural Biotechnology	BTB 206	9	Plant Physiology II	Spring	This course offers all aspects of plant physiology. Water uptake, plant growth regulators, etc.	Prof. Dr. Songül Sever Mutlu	NA
6	Agricultural Biotechnology	BTB 301	8	Fundamentals of Genetics	Fall	Genetic material, mitosis, meiosis, chromosomal theory of inheritance, Mendelian genetics, extensions to Mendelian genetics, dominant/recessive interactions, genotypic interactions, autosomal and sex linked inheritance, quantitative genetics, population genetics.	Assoc. Prof. Dr. Münevver Aksoy	NA
7	Agricultural Biotechnology	BTB 303	8	Molecular Biology II	Fall	Translation, post-translational modifications, Epigenetic, mutations and related diseases, genome editing technologies	Assoc. Prof. Dr. Aysun Özçelik	NA
8	Agricultural Biotechnology	BTB 308	8	Plant Breeding	Spring	Crispr, speed breeding, MAS, incompatibility, CMS systems	Prof. Dr. Nedim Mutlu	NA
9	Agricultural Biotechnology	BTB 309	8	Biotechnology Laboratory Techniques II	Fall	The scope of the course includes laboratory safety, introduction of basic chemicals, consumables, tools and equipment used in laboratory and application of basic laboratory analysis.	Assoc. Prof. Dr. Hatice İkten	NA
10	Agricultural Biotechnology	BTB 401	8	Introduction to Bioinformatics	Fall	The course begins with foundational concepts in genetics, progressing through two introductory sessions that establish the core principles. Students are then introduced to gene databases and sequence analysis tools such as NCBI Gene, BLAST, and alignment algorithms, followed by practical use of platforms like Phytozome and Clustal Omega. Arabidopsis.org is used as a model resource for exploring gene function. Subsequent sessions cover gene structure and expression, along with essential skills in primer design. Students also learn to construct phylogenetic trees and demonstrate their understanding in a mid-term exam. Further practical training includes primer design using Primer3 Input and OligoCalc, followed by instruction in cloning strategies. The course concludes with advanced genome editing technologies, focusing on the design and application of TALEN and CRISPR systems.	Assoc. Prof. Dr. M. Aydın Akbudak	NA

11	Agricultural Biotechnology	BTB 403	8	Plant Biotechnology	Fall	Definition and history of plant biotechnology, applications of biotechnology in agriculture, the structure and function of DNA and RNA, transcription and translation, PCR, RT-PCR, recombinant DNA technology, gene cloning, gene libraries, nuclease enzymes, vectors, genetic transformation, gene editing, testing GMO's and gene edited plants, molecular markers, application of molecular markers in agriculture. The course also includes lab applications such as DNA isolation, PCR and gel electrophoresis.	Assoc. Prof. Dr. Hatice İkten	NA
12	Agricultural Biotechnology	BTB 405	8	Cell Biology I	Fall	Introduction to cell biology, Strcuture of the cell membrane, Cellular ogranelles, Membrane transport, Intracellular trafficking, Vesicular transport, Cytoskeleton, Signaling mechanisms, Phototropic energy metabolism, chemotrophis energy metabolism.	Assoc. Prof. Dr. Münevver Aksoy	NA
13	Agricultural Biotechnology	BTB 415	8	Recombinant DNA Techniques	Fall	This course offers a theoretical overview of key methodologies in recombinant DNA technology. It begins with the fundamentals of PCR and RT-PCR, followed by the principles of gel electrophoresis used for nucleic acid separation. The program then introduces plant transformation techniques and gene silencing strategies, including RNA interference, TALENs, and CRISPR-based approaches. Subsequent lectures focus on the purification of DNA from living cells, DNA introduction into host organisms, and the characteristics of cloning vectors used in E. coli and eukaryotic systems. The course concludes with the molecular basis and design considerations for recombinant protein production in prokaryotic and eukaryotic expression platforms, providing students with a solid conceptual foundation in modern genetic engineering.	Assoc. Prof. Dr. M. Aydın Akbudak Assoc. Prof. Dr. Aysun Özçelik	NA