

# DERS HAVUZLARI

## Non-Credit Compulsory (Kredisiz Zorunlu)

| Course Code | Course Title   |
|-------------|--|
| BTEC 591    | Seminars in Biotechnology-I                                |
| BTEC 592    | Seminars in Biotechnology-II                               |
| BTEC 593    | Research and Publication Ethics                            |
| BTEC 598    | Thesis Project   |
| BTEC 599    | Thesis Study   |
| BTEC 691    | Seminars in Biotechnology-I                                |
| BTEC 692    | Seminars in biotechnology-II                               |
| BTEC 693    | Scientific Research and Publication Ethics and Methodology |
| BTEC 699    | Thesis Study   |

## Elective Compulsory Biotechnology (Seçmeli Zorunlu Biyoteknoloji)

| Course Code | Course Title  |
|-------------|---|
| BSB 511     | Fundamentals of Bioinformatics                      |
| BSB 513     | Fundamentals of System Biology                      |
| BSB 615     | Biostatistics                                       |
| BTEC 501    | Fundamentals of Biotechnology                       |
| BTEC 502    | Molecular Biotechnology and Gene Regulation         |
| BTEC 503    | Introduction to Biomaterials                        |
| BTEC 504    | Advanced Plant Physiology                           |
| BTEC 505    | Advanced Biochemistry (İleti Biyokimya)             |
| BTEC 564    | Protein Biotechnology                               |
| BTEC 601    | Advanced Biotechnology                              |
| BTEC 602    | Agricultural Biotechnology and Global Food Security |
| BTEC 603    | Principles of Synthetic Biology and Biotechnology   |
| CHEM 660    | Molecular Modelling I                               |
| MBG 521     | Advanced Molecular Plant Physiology                 |
| MBG 524     | Computer Programing in Biology                      |
| MBG 621     | Prokaryotic Gene Expression                         |
| MBG 645     | Plant Biotechnology                                 |
| NANO 618    | Nanobiotechnology                                   |
| NANO 511    | Fundamentals of Nanoscience and Nanotechnology      |

## Elective Compulsory Bioentrepreneurship (Seçmeli Zorunlu Biyo Girişimcilik)

| Course Code | Course Title   |
|-------------|--|
| BTEC 521    | Entrepreneurship in Biotechnology                            |
| BTEC 523    | Biotechnology Management                                     |
| BTEC 526    | Intellectual Property, Patent and Licensing in Biotechnology |
| BTEC 621    | Change Management in Biotechnology                           |
| BTEC 622    | Marketing in Biotechnology                                   |
| BTEC 623    | Technology Transfer and Commercialization                    |
| BTEC 624    | Finance and Strategic Planning in Biotechnology              |
| BTEC 625    | Engineering Applications in Pharmaceutical Biotechnology     |
| SSTR 659    | Strategic Entrepreneurship                                   |
| SSTR 662    | R&D Management   |
| NANO 517    | Project Management and Entrepreneurship                      |

## Area Elective Courses (Alan Seçmeli Dersleri)

### a) Medical Biotechnology (Tıbbi Biyoteknoloji)

| Course Code | Course Title  |
|-------------|---|
| BTEC 541    | Fundamentals of Medical Biotechnology                                       |
| BTEC 542    | Pharmaceutical Biotechnology and Drug Discovery                             |
| BTEC 543    | Introduction to Biomedical Engineering                                      |
| BTEC 551    | Genome Editing Strategies   |
| BTEC 552    | Biomaterials in Biotechnology and Tissue Engineering                        |
| BTEC 553    | Gene and Stem Cell Therapies in Medical Biotechnology                       |
| BTEC 554    | Biosensors/ Biyosensörler   |
| BTEC 641    | Advanced Topics in Biomedical Engineering                                   |
| BTEC 642    | Fundamentals of Clinical and Molecular Diagnostics of Medical Biotechnology |
| BTEC 643    | Molecular Pharmacology  |
| BTEC 651    | Regenerative Medicine   |
| BTEC 652    | Forensic Technologies   |
| BTEC 653    | Personalized Medicine   |
| CHEM 775    | Molecular Diagnostics and Biosensor Technologies                            |
| PHYS 530    | Physics and Technology of Semiconductor Optoelectronic Detectors            |
| MBG 622     | Eukaryotic Gene Expression  |
| MBG 623     | Viral Genetics and Gene Therapy   |
| MBG 630     | Molecular and Cellular Immunology   |

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| MBG 632 | Cancer Molecular Genetics              |
| MBG 638 | Stem Cell Biology                      |
| MBG 640 | Advanced Neurobiology                  |
| CED 542 | BioMEMS - Fabrication and Applications |

#### b) Industrial Biotechnology (Endüstriyel Biyoteknoloji)

| Course Code | Course Title  |
|-------------|---|
| BTEC 561    | Bioremediation  |
| BTEC 562    | Bioprocess Engineering  |
| BTEC 563    | Enzyme Engineering (Enzim Mühendisliği)                                       |
| BTEC 565    | Microorganisms in Industrial Biotechnology                                    |
| BTEC 661    | Biochemical Engineering   |
| BTEC 662    | Modern Applications of Food Biotechnology                                     |
| BTEC 663    | Biofuels  |
| BTEC 664    | Upstream and Downstream Processing in Biotechnology                           |
| BTEC 665    | Principles of Fermentation Technology/Fermentasyon Teknolojisi Temel İlkeleri |
| CED 519     | Biopolimer I  |
| CED 618     | Bioenergy Systems   |
| CED 619     | Food Preservation Engineering   |
| CHEM 670    | Industrial Biocatalysis and Bioconversion                                     |
| CHEM 671    | Immobilized Enzyme Methods  |
| ENVE 617    | Environmental Toxicology  |
| ENVE 625    | Biomass and Waste Technologies  |
| MBG 543     | Marine Biotechnology  |
| MBG 676     | Food microbiology and biotechnology   |
| NANO 617    | Industrial Applications of Nanotechnology                                     |
| BSB 516     | Bioreaction Engineering   |

#### c) Plant Biotechnology (Bitki Biyoteknolojisi)

| Course Code | Course Title   |
|-------------|--|
| BTEC 571    | Seed Biology, Quality and Technologies   |
| BTEC 572    | Genetically Modified Plants  |
| BTEC 573    | Soilless Agriculture Technologies  |
| BTEC 574    | Advanced Plant Nutrition: Mineral and Organic Fertilizers and Growth Stimulants                                    |
| BTEC 575    | Plant Genomics   |
| BTEC 576    | Plant Tissue Culture and Micropropagation  |
| BTEC 671    | Plant Abiotic Stress Physiology and Tolerance  |
| BTEC 672    | Biofortification and Human Health: Agronomic, Genetic and Biotechnological Approaches                              |
| BTEC 673    | Agrochemicals, Environment and Human Health  |
| BTEC 674    | Phytohormones and Applications in Crop Production  |
| BTEC 676    | Beneficial Soil Microorganisms and Microbial Fertilizers/ Yararlı Toprak Mikroorganizmaları ve Mikrobiyal Gübreler |
| BTEC 675    | Organic Crop Production Technologies   |
| MBG 523     | Advanced Molecular Plant Nutrition   |
| MBG 661     | Plant Molecular Genetics   |
| MBG 665     | Molecular Plant Breeding   |
| MBG 667     | Plant Metabolic Engineering  |

#### d) Synthetic and System Biotechnology (Sentetik ve Sistem Biyoteknolojisi)

| Course Code | Course Title   |
|-------------|--|
| BSB 611     | Foundations of Mathematical Modelling in Biology             |
| BSB 612     | Systems Neuroscience   |
| BSB 617     | Systems Biology of Host-Pathogen Interactions                |
| BSB 521     | Cell Fate and Epigenetics from a Systems Biology perspective |
| BSB 613     | Advanced Systems Biology                                     |
| BTEC 581    | Synthetic Biology and Biotechnology                          |
| BTEC 582    | Tools in High Throughput Analyses                            |
| BTEC 584    | Signaling and Information Processing in Biological Systems   |
| BTEC 681    | Current Topics in Synthetic Biology                          |
| BTEC 682    | Metabolic and Cellular Engineering                           |
| BTEC 683    | Tools for Synthetic and Systems Biotechnology                |
| BTEC 684    | Gene Mining and Metagenomics                                 |
| CED 612     | Applied Advanced Mathematics in Chemical Engineering         |
| ELEC 672    | Numerical Analysis for Simulation and Modeling               |
| MATH 677    | Non-linear Analysis for Dynamic Systems                      |
| MBG 524     | Computer Programming in Biology                              |