



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

Institute of Health Sciences
Sağlık Bilimleri Enstitüsü

	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	Gene and Cell Therapy (MA)	GHT 5001	7	Gene Therapy Vectors: Methods	Fall	Gene therapy, on a basic level, is defined as the delivery of nucleic acids to a cell in order to produce a desired effect. There are many methods that can be utilized in order to deliver nucleic acids to cells; however, the most efficient and adaptable method is the use of viral vectors. Viruses have naturally evolved over millennia to develop elegant mechanisms used to evade host immunity, gain entry to a cell, deliver their genetic material, and hijack host cell machinery in order to produce progeny virions. Viral vector-based gene therapy harnesses this awesome power of nature in order to efficiently deliver a desired genetic payload to cells of interest. The fundamental concept of a viral vector is relatively simple.	Prof. Dr. Salih Şanlıoğlu	Face to Face
2	Gene and Cell Therapy (MA)	GHT 5003	7	Principles of Gene Editing	Fall	The study of natural DNA repair pathways in bacteria and yeast, as well as the mechanisms of DNA recombination, showed that cells have endogenous machinery to repair DNA double-strand breaks that would otherwise be lethal. Thus, methods for introducing precise breaks in the DNA at desired editing sites were recognized as a valuable strategy for targeted genomic engineering as described in this lecture.	Prof. Dr. Salih Şanlıoğlu	Face to Face
3	Gene and Cell Therapy (MA)	GHT 5005	7	Principles of Gene Manipulation	Fall	General overview of gene manipulation, providing students with detailed knowledge on the various basic techniques that are applied in the field of DNA manipulation, and discussion of the advantages and disadvantages of the widely applied techniques.	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
4	Gene and Cell Therapy (MA)	GHT 5007	7	Nanotechnology-based Gene Delivery Systems	Fall	Therapeutic application of DNA pharmaceuticals is limited due to the stability problems of DNA in the circulation. Naked DNA is rapidly eliminated from the circulation after intravenous administration, due to the digestion by nucleases and to the hepatic uptake clearance. The development of effective and safer systems useful for in vivo transfection is needed in order to develop medicines for gene therapy. Gene delivery systems include viral and non-viral vectors. Viral vectors are the most effective, but their application is limited by their immunogenicity and oncogenicity.	Assoc. Prof. Dr. Devrim Demir Dora	Face to Face
5	Gene and Cell Therapy (MA)	GHT 5011	7	Normal Human Embryonic Development and Developmental Abnormalities	Fall	This course will cover the key events of human development during the embryonic period of the first eight weeks (weeks 1 - 8) following fertilization. Individual images of all Carnegie stages, scanning electron micrographs of the earlier stages, cross-sections showing mid- and late-embryonic internal structures, and their functional relevance will be included in this course	Assoc. Prof. Dr. Yasemin Göksu Erol	Face to Face
6	Gene and Cell Therapy (MA)	GHT 5013	7	Functional Cell Biology	Fall	Histology is the examination of the microscopic structure of cells, tissues and organs. The main approach of the Functional Histology course is to explain the general and structural features of cells, tissues and organs based on a functional base. Every microscopic structure in the body has a logic, so that this course deals with the precise logic of anatomy and morphology and discusses the functions of various cells, tissues and organs.	Assoc. Prof. Dr. Yasemin Göksu Erol	Face to Face
7	Gene and Cell Therapy (MA)	GHT 5017	7	Cellular Electrophysiology	Fall	Ionic equilibrium and electrochemical gradient, membrane potential, Hodgkin-Huxley model, Biophysical properties of ion channels, Driving force, resistance, capacitance, Electrical model of cell membrane, Electrode potential and junction potential, Intracellular recording, Voltage clamp technique, Current clamp technique, Equivalent circuits for recording techniques, Current-voltage relationship and reversal potential, Activation and inactivation kinetics of channels.	Prof. Dr. Semir Özdemir	Face to Face
8	Gene and Cell Therapy (MA)	GHT 5019	4	Journal Club	Fall	These can make the student(s) become more familiar with the advanced literature (scientific publications) in their field of study. In addition, these journal clubs help improve the students' skills of understanding and debating current topics of active interest in their field. Typically, each graduate student can voice their view relating to several questions such as the validity of the research design, the statistics employed, the appropriateness of the controls that were used, etc. There might be an attempt to synthesize together the results of several papers, even if some of these results might first appear to contradict each other. Even if the results of the study are seen as valid, there might be a discussion of how useful the results are and if these results might lead to new research or to new applications.	All Academic Staff in the Department	Face to Face

9	Gene and Cell Therapy (MA)	GHT 5021	7	Research in Gene and Cell Therapy*)	Fall	Gene therapy is the use of genetic material to treat genetic diseases. This may involve adding a wild type copy of the gene (gene addition) or altering a gene with mutation to the wild type gene (gene editing). The treatment may take place outside of the body (ex vivo) or inside the body (in vivo). To get the gene into the genome inside the cells, modified viruses or other vectors are used. Cell therapy is the use of cells that are taken either from the patient themselves or a donor to treat diseases. Cells used for cell therapy are often stem cells, cells that can mature into different types of specialized cells. Cells used for cell therapy may or may not be genetically altered. It is sometimes easier to remove cells from the body, treat them with gene therapy and then place them back than treating the cells inside the body. This is the case for gene therapy for blood disorders. Since most of the genetic disorders requires gene modified cells for the treatment, gene and cell therapy are considered to be overlapping fields of medicine. Gene and cell therapy technology is evolving rapidly and we are now closer than ever to gene and cell therapies for many different diseases. However, gene and cell therapies remain experimental medicines and much more research is needed before many of these therapies are available to all patients everywhere	All Academic Staff in the Department	Face to Face
10	Gene and Cell Therapy (MA)	GHT 5023	4	Seminar	Fall	Students determine their interest fields, review the literature, evaluate, plan the reseach process and report their studies.	All Academic Staff in the Department	Face to Face
11	Gene and Cell Therapy (MA)	GHT 5025	7	CRISPR: Gene-Editing Application	Fall	This course is designed to provide insight into the discovery and biological principles of CRISPR-Cas technology. This course primarily focuses on understanding the emerging applications of this technology in various gene editing applications in gene therapy applications.	Asst. Prof. Dr. Reha Onur Azizoglu	Face to Face
12	Gene and Cell Therapy (MA)	GHT 5002	7	Methods and Protocols in CRISPR Gene Editing	Fall	And many more genetic manipulation tools have been built on top of the CRISPR-Cas9 system, such as CRISPR-based gene activation, gene interference, base editing, DNA methylation, and histone acetylation. Among all the already harnessed CRISPR-Cas systems utilized for gene editing, the CRISPR-Cas9 system is still the most extensively developed and broadly used one. This lecture is intended to assist graduates, and researchers with detailed guidelines and methods for the CRISPR gene editing field.	Prof. Dr. Salih Şanlıoğlu	Face to Face
13	Gene and Cell Therapy (MA)	GHT 5004	7	Gene Therapy Vectors: Protocols	Fall	This course covers various aspects of gene expression from molecular genetics and biochemical perspectives. Topics covered include: genome and gene structure, transcription and translation processes in prokaryotes and eukaryotes, structures and functions of RNA polymerase and ribosome, structures of gene promoters, and a detailed mechanistic review of how gene expression is regulated.	Prof. Dr. Salih Şanlıoğlu	Face to Face
14	Gene and Cell Therapy (MA)	GHT 5006	7	Animal Models of Diabetes	Fall	The main purpose of this course is to introduce researchers to the animal model of diabetes for both studing molecular pathogenesis of diabetes and the testing of the therapeutic efficacy of novel compounds.	Prof. Dr. Salih Şanlıoğlu	Face to Face
15	Gene and Cell Therapy (MA)	GHT 5008	7	Scientific Article Writing Techniques	Fall	General overview of the genome structure and organization of human genome and genomes of various different microorganisms, providing students with detailed knowledge on various different basic and advanced techniques used in DNA manipulation and proteomics approaches, and discussion of the purpose and principles of use of these techniques in genome-based research.	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
16	Gene and Cell Therapy (MA)	GHT 5010	7	Gene Manipulation and Genomics Applications	Fall	General overview of the genome structure and organization of human genome and genomes of various different microorganisms, providing students with detailed knowledge on various different basic and advanced techniques used in DNA manipulation and proteomics approaches, and discussion of the purpose and principles of use of these techniques in genome-based research.	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
17	Gene and Cell Therapy (MA)	GHT 5012	7	Expression Systems for Manufacturing of Recombinant Pharmaceutical Proteins	Fall	The therapeutic use of recombinant proteins has increased during the last years. The aim of the course is to teach the efficient expression sytems for the production of various recombinant therapeutic proteins such as recombinant human antithrombin (rhAT), Factor VIII, recombinant human growth hormone, erythropoietine, albumin, etc.	Assoc. Prof. Dr. Devrim Demir Dora	Face to Face
18	Gene and Cell Therapy (MA)	GHT 5014	7	In Vitro Fertilization Procedures and Fertillity Preservation Methods	Fall	In this course, both basic knowledge of assisted reproductive techniques and andrology laboratory techniques are involved. This course also provides the discussion of cryopreservation methods for fertility preservation and the challenges of their applications.	Assoc. Prof. Dr. Yasemin Göksu Erol	Face to Face
19	Gene and Cell Therapy (MA)	GHT 5016	7	Human Fetal Growth and Development	Fall	The fetal period (Weeks 9 - 38), is a time of extensive growth and differentiation of organ primordia established in the embryonic period. This course will cover the key events of human development during the fetal period and abnormal fetal development, as well.	Doç. Dr. A. Yasemin GÖKSU EROL	Face to Face
20	Gene and Cell Therapy (MA)	GHT 5022	7	Ion Channels	Fall	Hodgkin-Huxley Model, Basic Properties of Pores, Diffusion and Behaviour of Ions in solution, The structures of ion channels, Ion selectivity, Voltage-gated ion channels , Extracellular ligand gated ion channels, Mechanosensitive and cell volume-regulated ion channels, other ion channels	Prof. Dr. Semir Özdemir	Face to Face
21	Gene and Cell Therapy (MA)	GHT 5026	4	Journal Club	Fall	These can make the student(s) become more familiar with the advanced literature (scientific publications) in their field of study. In addition, these journal clubs help improve the students' skills of understanding and debating current topics of active interest in their field. Typically, each graduate student can voice their view relating to several questions such as the validity of the research design, the statistics employed, the appropriateness of the controls that were used, etc. There might be an attempt to synthesize together the results of several papers, even if some of these results might first appear to contradict each other. Even if the results of the study are seen as valid, there might be a discussion of how useful the results are and if these results might lead to new research or to new applications.	All Academic Staff in the Department	Face to Face

22	Gene and Cell Therapy (MA)	GHT 5028	7	Research in Gene and Cell Therapy*)	Fall	Gene therapy is the use of genetic material to treat genetic diseases. This may involve adding a wild type copy of the gene (gene addition) or altering a gene with mutation to the wild type gene (gene editing). The treatment may take place outside of the body (ex vivo) or inside the body (in vivo). To get the gene into the genome inside the cells, modified viruses or other vectors are used. Cell therapy is the use of cells that are taken either from the patient themselves or a donor to treat diseases. Cells used for cell therapy are often stem cells, cells that can mature into different types of specialized cells. Cells used for cell therapy may or may not be genetically altered. It is sometimes easier to remove cells from the body, treat them with gene therapy and then place them back than treating the cells inside the body. This is the case for gene therapy for blood disorders. Since most of the genetic disorders requires gene modified cells for the treatment, gene and cell therapy are considered to be overlapping fields of medicine. Gene and cell therapy technology is evolving rapidly and we are now closer than ever to gene and cell therapies for many different diseases. However, gene and cell therapies remain experimental medicines and much more research is needed before many of these therapies are available to all patients everywhere	All Academic Staff in the Department	Face to Face
23	Gene and Cell Therapy (MA)	GHT 5030	4	Seminar	Fall	Students determine their interest fields, review the literature, evaluate, plan the reseach process and report their studies.	All Academic Staff in the Department	Face to Face
24	Gene and Cell Therapy (MA)	GHT 5032	7	Biochemistry of Gene Expression	Fall	This course covers various aspects of gene expression from a molecular genetic and biochemical perspectives. The topics covered include: genome and gene structure, the processes of transcription and translation in prokaryotes and eukaryotes, the structures and functions of RNA polymerase and the ribosome, structures of gene promoters, and a detailed mechanistic examination of how gene expression is regulated in the cell.	Asst. Prof. Dr. Reha Onur Azizoglu	Face to Face
25	Gene and Cell Therapy (PhD)	GHT 7001	7	Essentials of Stem Cells	Fall	From basic biology/mechanisms, early development, ectoderm, mesoderm, endoderm, methods to application of stem cells to specific human diseases, regulation and ethics, and patient perspectives, no topic in the field of stem cells is left uncovered. Essential information on stem cell biology is provided to a great length.	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
26	Gene and Cell Therapy (PhD)	GHT 7003	7	Gene Delivery Systems and Therapeutic Strategies	Fall	Covering the general, structural and functional features, and production methods of the viral vector systems which are most frequently preferred in vitro, in vivo, and ex vivo gene transfers, and discussion of the advantages and disadvantages of the related therapeutic strategies.	Prof. Dr. Salih Şanlıoğlu	Face to Face
27	Gene and Cell Therapy (PhD)	GHT 7005	7	Pharmaceutical Biotechnology	Fall	This course aims to provide basic knowledge about the production and formulation of pharmaceuticals derived by recombinant DNA technology, peptide protein delivery systems, non-viral DNA delivery systems and regulatory issues about biopharmaceuticals.	Assoc. Prof. Dr. Devrim Demir Dora	Face to Face
28	Gene and Cell Therapy (PhD)	GHT 7009	7	Clinical Approach to Infertility and Assisted Reproductive Techniques	Fall	This course will cover the most common causes of infertility, together with the current clinical approach to infertile couples. In addition, there is a need for a course in which infertility causes male and female causes and treatment options in order to direct the students to experimental research related to clinics. Thus, students who take this course will be able to plan their studies on infertility research, expanding the understanding of clinical related issues and planning in order to improve infertility diagnosis and treatment, in vivo and in vitro experimental models.	Assoc. Prof. Dr. A. Yasemin Göksu Erol	Face to Face
29	Gene and Cell Therapy (PhD)	GHT 7013	7	Introduction to Medical Physiology	Fall	Description and discussion of the physiological functions of blood, heart, circulation, respiration and kidneys; understanding the regulatory functions of these systems in homeostasis under basal conditions.	Prof. Dr. Mehmet Bülbül	Face to Face
30	Gene and Cell Therapy (PhD)	GHT 7017	7	Structure and Functions of Biomolecules	Fall	This course reviews basis of nucleic acid, protein, carbohydrate, and lipid structure. Fundamental knowledge regarding the metabolism of these biomolecules is also given. Emphasis is made on areas relevant to human biology and disease.	Prof. Dr. Mutay Aydın Aslan	Face to Face
31	Gene and Cell Therapy (PhD)	GHT 7025	7	Principles of Medical Genetics	Fall	Any medical or genetic counseling student, advanced undergraduate, graduate student in genetics or genomics, resident in any field of clinical medicine, practicing physician, or allied medical professional in nursing or physical therapy should find this lecture series to be a thorough but not exhaustive presentation of the fundamentals of human genetics and genomics as applied to health and disease	Prof. Dr. Salih Şanlıoğlu	Face to Face
32	Gene and Cell Therapy (PhD)	GHT 7027	4	Journal Club	Fall	These can make the student(s) become more familiar with the advanced literature (scientific publications) in their field of study. In addition, these journal clubs help improve the students' skills of understanding and debating current topics of active interest in their field. Typically, each graduate student can voice their view relating to several questions such as the validity of the research design, the statistics employed, the appropriateness of the controls that were used, etc. There might be an attempt to synthesize together the results of several papers, even if some of these results might first appear to contradict each other. Even if the results of the study are seen as valid, there might be a discussion of how useful the results are and if these results might lead to new research or to new applications.	All Academic Staff in the Department	Face to Face

33	Gene and Cell Therapy (PhD)	GHT 7029	7	Research in Gene and Cell Therapy*)	Fall	Gene therapy is the use of genetic material to treat genetic diseases. This may involve adding a wild type copy of the gene (gene addition) or altering a gene with mutation to the wild type gene (gene editing). The treatment may take place outside of the body (ex vivo) or inside the body (in vivo). To get the gene into the genome inside the cells, modified viruses or other vectors are used. Cell therapy is the use of cells that are taken either from the patient themselves or a donor to treat diseases. Cells used for cell therapy are often stem cells, cells that can mature into different types of specialized cells. Cells used for cell therapy may or may not be genetically altered. It is sometimes easier to remove cells from the body, treat them with gene therapy and then place them back than treating the cells inside the body. This is the case for gene therapy for blood disorders. Since most of the genetic disorders requires gene modified cells for the treatment, gene and cell therapy are considered to be overlapping fields of medicine. Gene and cell therapy technology is evolving rapidly and we are now closer than ever to gene and cell therapies for many different diseases. However, gene and cell therapies remain experimental medicines and much more research is needed before many of these therapies are available to all patients everywhere.	All Academic Staff in the Department	Face to Face
34	Gene and Cell Therapy (PhD)	GHT 7031	4	Seminar	Fall	Students determine their interest fields, review the literature, evaluate, plan the reseach process and report their studies.	All Academic Staff in the Department	Face to Face
35	Gene and Cell Therapy (PhD)	GHT 7033	7	Virology for Gene Therapy	Fall	This course is designed to provide understanding on how viruses are built, how they infect and replicate in host cells, how they spread, evolve and cause disease, and how they can be used as a vector for gene therapy. Main focus is given to human and animal viruses and specific applications of viruses (topics on virus-based gene therapy; modern advances in vaccinology; “oncolytic” viruses to treat cancers; using bacteriophages and plant viruses to combat human and animal diseases).	Asst. Prof. Dr. Reha Onur Azizoglu	Face to Face
36	Gene and Cell Therapy (PhD)	GHT 7002	7	Scientific Project Writing Techniques	Fall	Types and sections of scientific projects will be covered in detail and the students will be applying what they learn throughout the course in related assignments and evaluations. Good and bad examples related to the covered topics will be introduced to the students in relation to the field of Gene and Cell Therapy.	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
37	Gene and Cell Therapy (PhD)	GHT 7004	7	Tissue Derived Stem Cells	Fall	Covering the general, molecular biological and genetic features of embryonic and adult stem cells, defining the different types of stem cells	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
38	Gene and Cell Therapy (PhD)	GHT 7006	7	Non-viral Gene Delivery Systems	Fall	The topics covered include optimizing delivery formulations, lipids and liposome morphologies, improving gene expression, encapsulation, flexibility, optimal colloidal suspensions, serum stability, circulation half-life, reversible masking, cell entry mechanisms, targeted delivery, biodistribution, barrier penetration in vivo, plasmid design, plasmid DNA preparation, and administration routes.	Prof. Dr. Salih Şanlıoğlu	Face to Face
39	Gene and Cell Therapy (PhD)	GHT 7008	7	Quality of Biological/Biotechnology-Derived/Biosimilar Medicinal Products	Fall	This course aims to provide basic knowledge about the production and formulation of pharmaceuticals derived by recombinant DNA technology, peptide protein delivery systems, non-viral DNA delivery systems and regulatory issues about biopharmaceuticals.	Assoc. Prof. Dr. Devrim Demir Dora	Face to Face
40	Gene and Cell Therapy (PhD)	GHT 7010	7	Mast Cells and Mast Cell-Targeted Therapeutic Strategies	Fall	Mast cells (MH) were well known in the past with their prominent role in human, especially in allergic diseases and anaphylaxis; In recent years, it has been revealed that they have many functions, especially as part of the natural transmission system. It is known to play a role in many different events/diseases such as growth, MH transport support, angiogenesis, tissue repair, autoimmune diseases (eg rheumatoid arthritis), neurodegenerative diseases and cancer. MH also has important roles in post-surgical healing, adhesion process, wound contamination control, and inflammation process. In recent years, many studies have been conducted showing the importance of MD in surgical deaths.	Assoc. Prof. Dr. A. Yasemin Göksu Erol	Face to Face
41	Gene and Cell Therapy (PhD)	GHT 7012	7	Medical Physiology I	Fall	Description and discussion of the physiological functions of blood, heart, circulation, respiration and kidneys; understanding the regulatory functions of these systems in homeostasis under basal conditions.	Prof. Dr. Mehmet Bülbül	Face to Face
42	Gene and Cell Therapy (PhD)	GHT 7016	4	Reprogenetics	Fall	Description of the molecular biological mechanisms during oogenesis, spermatogenesis and early embryogenesis, and discussion of the current improvements in the molecular biological events during these early developmental stages.	Prof. Dr. Saffet Öztürk	Face to Face
43	Gene and Cell Therapy (PhD)	GHT 7026	7	Clinical Case Studies in Medical Genetics	Fall	Any medical or genetic counseling student, advanced undergraduate, genetics or genomics graduate student, general practitioner, or associate medicine practitioner in nursing or physical therapy in any field of clinical medicine should be able to obtain a comprehensive presentation of the fundamentals of human genetics and genomics applied to health and disease.	Prof. Dr. Salih Şanlıoğlu	Face to Face
44	Gene and Cell Therapy (PhD)	GHT 7028	4	Journal Club	Fall	These can make the student(s) become more familiar with the advanced literature (scientific publications) in their field of study. In addition, these journal clubs help improve the students' skills of understanding and debating current topics of active interest in their field. Typically, each graduate student can voice their view relating to several questions such as the validity of the research design, the statistics employed, the appropriateness of the controls that were used, etc. There might be an attempt to synthesize together the results of several papers, even if some of these results might first appear to contradict each other. Even if the results of the study are seen as valid, there might be a discussion of how useful the results are and if these results might lead to new research or to new applications.	All Academic Staff in the Department	Face to Face

45	Gene and Cell Therapy (PhD)	GHT 7030	7	Research in Gene and Cell Therapy*)	Fall	Gene therapy is the use of genetic material to treat genetic diseases. This may involve adding a wild type copy of the gene (gene addition) or altering a gene with mutation to the wild type gene (gene editing). The treatment may take place outside of the body (ex vivo) or inside the body (in vivo). To get the gene into the genome inside the cells, modified viruses or other vectors are used. Cell therapy is the use of cells that are taken either from the patient themselves or a donor to treat diseases. Cells used for cell therapy are often stem cells, cells that can mature into different types of specialized cells. Cells used for cell therapy may or may not be genetically altered. It is sometimes easier to remove cells from the body, treat them with gene therapy and then place them back than treating the cells inside the body. This is the case for gene therapy for blood disorders. Since most of the genetic disorders requires gene modified cells for the treatment, gene and cell therapy are considered to be overlapping fields of medicine. Gene and cell therapy technology is evolving rapidly and we are now closer than ever to gene and cell therapies for many different diseases. However, gene and cell therapies remain experimental medicines and much more research is needed before many of these therapies are available to all patients everywhere.	All Academic Staff in the Department	Face to Face
46	Gene and Cell Therapy (PhD)	GHT 7032	4	Seminar	Fall	Students determine their interest fields, review the literature, evaluate, plan the reseach process and report their studies.	All Academic Staff in the Department	Face to Face
47	Gene and Cell Therapy (PhD)	GHT 8001	7	Structure and Functions of Pancreatic Islets	Fall	Analysis of the development of pancreatic islets, and also growth of the different cell types constituting the islets with special emphasis on beta cells, their relations with human diseases, including a detailed look on the therapeutic potentials of current research approaches.	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
48	Gene and Cell Therapy (PhD)	GHT 8003	7	Therapeutic Applications of Stem Cells	Fall	Introduction of significant laboratory techniques used in isolation, characterization, culturing, genetic manipulation and reprogramming of stem cells, and evaluation of the potential use of stem cells in human diseases and injuries.	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
49	Gene and Cell Therapy (PhD)	GHT 8005	7	Target Diseases in Gene and Cell Therapy	Fall	This lecture focuses on targeted genetic diseases by gene and cell therapy providing readers with broad knowledge, insight, and tools available in the constantly evolving fields of gene therapy, cell therapy, and tissue engineering.	Prof. Dr. Salih Şanlıoğlu	Face to Face
50	Gene and Cell Therapy (PhD)	GHT 8007	7	Advanced Therapy Medicinal Products	Fall	Advanced Therapy Medicinal Products (ATMPs) are medicines for	Assoc. Prof. Dr. Devrim Demir Dora	Face to Face
51	Gene and Cell Therapy (PhD)	GHT 8011	7	Neuroglia-Mast Cell Interaction and Related Therapeutic Strategies in Neurodegenerative Diseases	Fall	Neuroinflammation is the main characteristic in various pathological	Assoc. Prof. Dr. A. Yasemin Göksu Erol	Face to Face
52	Gene and Cell Therapy (PhD)	GHT 8013	7	Medical Physiology II	Fall	Description and discussion of the physiological functions of blood, heart, circulation, respiration and kidneys; understanding the regulatory functions of these systems in homeostasis under basal conditions.	Prof. Dr. Mehmet Bülbül	Face to Face
53	Gene and Cell Therapy (PhD)	GHT 8017	7	Preclinical Development of Biotechnology-Derived Medicinal Products and Biosimilars	Fall	Main strategies of drug therapy.	Prof. Dr. Sadi Özdem	Face to Face
54	Gene and Cell Therapy (PhD)	GHT 8021	7	Radiotherapy	Fall	There are many unknown aspects of radiotherapy, genetic and biological mechanisms of action, which is one of the most important treatment modalities of cancer treatment, which is rapidly progressing in terms of imaging, planning and device development. The content of this course covers the rigorous transfer of these mechanisms to associate, undergraduate, graduate and doctoral students.	Assoc. Prof. Dr. Timur Koca	Face to Face
55	Gene and Cell Therapy (PhD)	GHT 8029	4	Journal Club	Fall	These can make the student(s) become more familiar with the advanced literature (scientific publications) in their field of study. In addition, these journal clubs help improve the students' skills of understanding and debating current topics of active interest in their field. Typically, each graduate student can voice their view relating to several questions such as the validity of the research design, the statistics employed, the appropriateness of the controls that were used, etc. There might be an attempt to synthesize together the results of several papers, even if some of these results might first appear to contradict each other. Even if the results of the study are seen as valid, there might be a discussion of how useful the results are and if these results might lead to new research or to new applications.	All Academic Staff in the Department	Face to Face
56	Gene and Cell Therapy (PhD)	GHT 8031	7	Research in Gene and Cell Therapy*)	Fall	Gene therapy is the use of genetic material to treat genetic diseases. This may involve adding a wild type copy of the gene (gene addition) or altering a gene with mutation to the wild type gene (gene editing). The treatment may take place outside of the body (ex vivo) or inside the body (in vivo). To get the gene into the genome inside the cells, modified viruses or other vectors are used. Cell therapy is the use of cells that are taken either from the patient themselves or a donor to treat diseases. Cells used for cell therapy are often stem cells, cells that can mature into different types of specialized cells. Cells used for cell therapy may or may not be genetically altered. It is sometimes easier to remove cells from the body, treat them with gene therapy and then place them back than treating the cells inside the body. This is the case for gene therapy for blood disorders. Since most of the genetic disorders requires gene modified cells for the treatment, gene and cell therapy are considered to be overlapping fields of medicine. Gene and cell therapy technology is evolving rapidly and we are now closer than ever to gene and cell therapies for many different diseases. However, gene and cell therapies remain experimental medicines and much more research is needed before many of these therapies are available to all patients everywhere.	All Academic Staff in the Department	Face to Face
57	Gene and Cell Therapy (PhD)	GHT 8035	7	Microbial Genetics and Genomics	Fall	It is crucial to develop comprehensive understanding of the fundamentals of the biochemical mechanisms of prokaryotic replication, transcription and translation mechanisms for application of them as vectors for effective gene therapies. The primary objective of this course is to provide the understanding of the molecular basis of biochemical mechanisms and genetics of replication, transcription and translation along with application of bacteria and viruses as a vector in gene therapies.	All Academic Staff in the Department	Face to Face

58	Gene and Cell Therapy (PhD)	GHT 8037	7	Immunology	Fall	The topics covered in this course are as follows: Structure, function and genetics of the immune system molecules Antibodies, B- and T- cell receptors Cytokines, Processes of lymphocyte development. Antigen presentation.	Asst. Prof. Dr. Reha Onur Azizoglu	Face to Face
59	Gene and Cell Therapy (PhD)	GHT 8002	7	Development of Pancreatic Islets and Relation to Diseases	Fall	Analysis of the development of pancreatic islets, and also growth of the different cell types constituting the islets with special emphasis on beta cells, their relations with human diseases, including a detailed look on the therapeutic potentials of current research approaches.	Prof. Dr. Ahter Dilşad Şanlıoğlu	Face to Face
60	Gene and Cell Therapy (PhD)	GHT 8004	7	Clinical Applications of Gene and Cell Therapy	Fall	In cell therapy, there is significant future potential for tissue regeneration and even replacement of damaged tissues with either, various types of progenitor cells or even with iPS cells.	Prof. Dr. Salih Şanlıoğlu	Face to Face
61	Gene and Cell Therapy (PhD)	GHT 8006	7	Cell and Gene Therapy	Fall	The ultimate goal of cell and gene therapy is to provide remedies for all the major obstacles to successful outcomes of HCT. Regulatory T-cell or mesenchymal stromal cell infusions aim to prevent or treat GvHD. Tumor antigen-specific T cells, CAR T cells, α/β TCR T	Prof. Dr. Salih Şanlıoğlu	Face to Face
62	Gene and Cell Therapy (PhD)	GHT 8008	7	Good Manufacturing Practice of Biotechnological/Biological Products	Fall	This course aims to provide knowledge about the 'ICH Quality Quidelines' quality requirements of biotechnological/biological medicinal products which are produced according to Good Manufacturing Practice (GMP) rules.	Assoc. Prof. Dr. Devrim Demir Dora	Face to Face
63	Gene and Cell Therapy (PhD)	GHT 8010	7	Cancer Cell and Cancer Stem Cell Biology and Therapeutic Applications	Fall	Different mechanisms contribute to intratumor heterogeneity, ncluding genetic mutations, the microenvironment, and the existence of subpopulations of cancer cells named cancer stem cells	Assoc. Prof. Dr. A. Yasemin Göksu Erol	Face to Face
64	Gene and Cell Therapy (PhD)	GHT 8026	4	Journal Club	Fall	These can make the student(s) become more familiar with the advanced literature (scientific publications) in their field of study. In addition, these journal clubs help improve the students' skills of understanding and debating current topics of active interest in their field. Typically, each graduate student can voice their view relating to several questions such as the validity of the research design, the statistics employed, the appropriateness of the controls that were used, etc. There might be an attempt to synthesize together the results of several papers, even if some of these results might first appear to contradict each other. Even if the results of the study are seen as valid, there might be a discussion of how useful the results are and if these results might lead to new research or to new applications.	All Academic Staff in the Department	Face to Face
65	Gene and Cell Therapy (PhD)	GHT 8028	7	Research in Gene and Cell Therapy*)	Fall	Gene therapy is the use of genetic material to treat genetic diseases. This may involve adding a wild type copy of the gene (gene addition) or altering a gene with mutation to the wild type gene (gene editing). The treatment may take place outside of the body (ex vivo) or inside the body (in vivo). To get the gene into the genome inside the cells, modified viruses or other vectors are used. Cell therapy is the use of cells that are taken either from the patient themselves or a donor to treat diseases. Cells used for cell therapy are often stem cells, cells that can mature into different types of specialized cells. Cells used for cell therapy may or may not be genetically altered. It is sometimes easier to remove cells from the body, treat them with gene therapy and then place them back than treating the cells inside the body. This is the case for gene therapy for blood disorders. Since most of the genetic disorders requires gene modified cells for the treatment, gene and cell therapy are considered to be overlapping fields of medicine. Gene and cell therapy technology is evolving rapidly and we are now closer than ever to gene and cell therapies for many different diseases. However, gene and cell therapies remain experimental medicines and much more research is needed before many of these therapies are available to all patients everywhere.	All Academic Staff in the Department	Face to Face
66	Gene and Cell Therapy (PhD)	GHT 8032	7	Immunotherapy	Fall	Topics to be covered in this course: Structure, function and genetics of immune system molecules o Antibodies, B- and T-cell receptors, Lymphocyte development processes. - Antigen presentation. - Caused by viruses, bacteria and fungi individual immune system how its components work together. - Related to tumor immunity and immune system deficiencies Basic concepts. - Recent advances in immunology.	All Academic Staff in the Department	Face to Face