Medicine			
Bachelor	TR-NQF-HE: Level 7	QF-EHEA: Second Cycle	EQF-LLL: Level 7

Course Introduction and Application Information

Course Code:	UNI261
Course Name:	Regenerative Biology and Medicine Applications
Semester:	Spring Fall
Course Credits:	ECTS: 5
Language of instruction:	Turkish
Course Condition:	
Does the Course Require Work Experience?:	No
Type of course:	University Elective
Course Level:	Bachelor | TR-NQF-HE:7. Master`s Degree | QF-EHEA:Second Cycle | EQF-LLL:7. Master`s Degree
Mode of Delivery:	E-Learning
Course Coordinator:	Dr. Öğr. Üy. ASLI PINAR ZORBA YILDIZ
Course Lecturer(s):	Aslı Pınar Zorba Yıldız
Course Assistants:	

Course Objective and Content

Course Objectives:	The aim of this course is to learn about regenerative biology, evaluation of tissues, wounds or immune processes such as antibody-vaccine that cannot be performed using today's technology, current treatment approaches, biomaterials used and 3D bioprinter systems, and learning the age-appropriate information and ways to reach information suitable for 21st century skills.

Course Content:	The content of this course includes current uses of regenerative biology in various treatments with today's technology and how it will be carried forward with new generation technologies in the future, various legal regulations and good laboratory practices.

Learning Outcomes

The students who have succeeded in this course;
1) Explains the concept of regenerative biology and compares it with examples in nature.
2) Classifies treatment methods that fall into the field of regenerative medicine.
3) Compares stem cell and somatic cell systems and their application areas.
4) Explain the basic principles of tissue engineering, biomaterials and application areas.
5) Explains transplantation processes, stem cell vaccines and immune response.
6) Explains artificial tissue engineering application areas and processes according to systems.
7) Explains and classifies nanotechnological approaches and cloning.
8) Explains working principles and legal regulations under GMP conditions.

Course Flow Plan

Week	Subject	Related Preparation
1)	History, Medical Purpose and Importance of Regenerative Biology	
2)	Cloning Technology: Therapeutic and Reproductive Cloning	
3)	Somatic Cell Culture Basic Principles and Applications	
4)	Stem Cell Systems, Types and Application Areas	
5)	Exosome Technology and Applications	
6)	Antibody Engineering and Stem Cell Vaccines	
7)	Midterm	
8)	Basic Tissue Engineering, Cell and Tissue Transplantation and Immunity	
9)	Biomaterials Used in Regenerative Medicine and Their Properties	
10)	Artificial Tissue Engineering with 3-D Printers	
11)	Musculoskeletal System, Diabetes and Islet Regenerative Medicine Applications	
12)	Central and Peripheral Nervous System Regenerative Medicine Applications	
13)	Nanobiotechnology Introduction, Nanorobotic Systems and Pharmaceutical Applications	

14)	GMP (Good Manufacturing Practice) Technology, Working Areas, Legal Regulations	
15)	Final	
16)	Final	

Sources

Course Notes / Textbooks:	• Alp Can, Kök Hücre, Akademisyen Kitapevi • Prof. Dr. Adil M. Allahverdiyev , Somatik ve Kök Hücre Kültür Sistemlerinin Temel İlkeleri, Nobel Tıp Kitapevleri • Michael A. Palladino, William J. Thieman, Biyoteknolojiye Giriş, Palme Yayıncılık • Steven R. Goodman , Goodman's Medical Cell Biology, 4th Edition, Elsevier
References:	• Alp Can, Kök Hücre, Akademisyen Kitapevi • Prof. Dr. Adil M. Allahverdiyev , Somatik ve Kök Hücre Kültür Sistemlerinin Temel İlkeleri, Nobel Tıp Kitapevleri • Michael A. Palladino, William J. Thieman, Biyoteknolojiye Giriş, Palme Yayıncılık • Steven R. Goodman , Goodman's Medical Cell Biology, 4th Edition, Elsevier

Course - Program Learning Outcome Relationship

Course Learning Outcomes	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Program Outcomes								
1) When Istinye University Faculty of Medicine student is graduated who knows the historical development of medicine, medical practices, and the medical profession and their importance for society.								
2) knows the normal structure and function of the human body at the level of molecules, cells, tissues, organs and systems.								
3) is capable of systematically taking an accurate and effective social and medical history from their patients and make a comprehensive physical examination.								
4) knows the laboratory procedures related to diseases; In primary care, the necessary material (blood, urine, etc.) can be obtained from the patient with appropriate methods and can perform the necessary laboratory procedures for diagnosis and follow-up or request laboratory tests.								
5) can distinguish pathological changes in structure and functions during diseases from physiological changes and can Interpret the								

Course Learning Outcomes	1	2	3	4	5	6	7	8
patient's history, physical examination, laboratory and imaging findings, and arrive at a pre-diagnosis and diagnosis of the patient's problem.								
6) knows, plans and applies primary care and emergency medical treatment practices, rehabilitation stages.								
7) can keep patient records accurately and efficiently, know the importance of confidentiality of patient information and records, and protects this privacy.								
8) knows the clinical decision-making process, evidence-based medicine practices and current approaches.								
9) knows and applies the basic principles of preventive health measures and the protection of individuals from diseases and improving health, and recognizes the individual and/or society at risk, undertakes the responsibility of the physician in public health problems such as epidemics and pandemics.								
10) knows the biopsychosocial approach, evaluates the causes of diseases by considering the individual and his / her environment.								
11) is capable of having effective oral and/or written communication with patients and their relatives, society and colleagues.								
12) knows the techniques, methods and rules of researching. It contributes to the creation, sharing, implementation and development of new professional knowledge and practices by using science and scientific method within the framework of ethical rules.								
13) can collect health data, analyze them, present them in summary, and prepare forensic reports.								
14) knows the place of physicians as an educator, administrator and researcher in delivery of health care. It takes responsibility for the professional and personal development of own and colleagues in all interdisciplinary teams established to increase the health level of the society.								
15) knows employee health, environment and occupational safety issues and takes responsibility when necessary.								
16) knows health policies and is able to evaluate their effects in the field of application.								

Course Learning Outcomes	1	2	3	4	5	6	7	8
17) keeps medical knowledge up-to-date within the framework of lifelong learning responsibility.								
18) applies own profession by knowing about ethical obligations and legal responsibilities, prioritizing human values and with self-sacrifice throughout own medical life.								

Course - Learning Outcome Relationship

No Effect	1 Lowest	2 Average	3 Highest

	Program Outcomes	Level of Contribution
1)	When Istinye University Faculty of Medicine student is graduated who knows the historical development of medicine, medical practices, and the medical profession and their importance for society.	
2)	knows the normal structure and function of the human body at the level of molecules, cells, tissues, organs and systems.	
3)	is capable of systematically taking an accurate and effective social and medical history from their patients and make a comprehensive physical examination.	
4)	knows the laboratory procedures related to diseases; In primary care, the necessary material (blood, urine, etc.) can be obtained from the patient with appropriate methods and can perform the necessary laboratory procedures for diagnosis and follow-up or request laboratory tests.	
5)	can distinguish pathological changes in structure and functions during diseases from physiological changes and can Interpret the patient's history, physical examination, laboratory and imaging findings, and arrive at a pre-diagnosis and diagnosis of the patient's problem.	
6)	knows, plans and applies primary care and emergency medical treatment practices, rehabilitation stages.	
7)	can keep patient records accurately and efficiently, know the importance of confidentiality of patient information and records, and protects this privacy.	
8)	knows the clinical decision-making process, evidence-based medicine practices and current approaches.	
9)	knows and applies the basic principles of preventive health measures and the protection	

	of individuals from diseases and improving health, and recognizes the individual and/or society at risk, undertakes the responsibility of the physician in public health problems such as epidemics and pandemics.	
10)	knows the biopsychosocial approach, evaluates the causes of diseases by considering the individual and his / her environment.	
11)	is capable of having effective oral and/or written communication with patients and their relatives, society and colleagues.	
12)	knows the techniques, methods and rules of researching. It contributes to the creation, sharing, implementation and development of new professional knowledge and practices by using science and scientific method within the framework of ethical rules.	
13)	can collect health data, analyze them, present them in summary, and prepare forensic reports.	
14)	knows the place of physicians as an educator, administrator and researcher in delivery of health care. It takes responsibility for the professional and personal development of own and colleagues in all interdisciplinary teams established to increase the health level of the society.	
15)	knows employee health, environment and occupational safety issues and takes responsibility when necessary.	
16)	knows health policies and is able to evaluate their effects in the field of application.	
17)	keeps medical knowledge up-to-date within the framework of lifelong learning responsibility.	
18)	applies own profession by knowing about ethical obligations and legal responsibilities, prioritizing human values and with self-sacrifice throughout own medical life.	

Assessment & Grading

Semester Requirements	Number of Activities	Level of Contribution
Homework Assignments	1	% 5
Presentation	1	% 5
Project	1	% 20
Midterms	1	% 20
Final	1	% 50
total		**% 100**

PERCENTAGE OF SEMESTER WORK		% 50
PERCENTAGE OF FINAL WORK		% 50
total		**% 100**

Workload and ECTS Credit Calculation

Activities	Number of Activities	Preparation for the Activity	Spent for the Activity Itself	Completing the Activity Requirements	Workload
Course Hours	2	14			28
Presentations / Seminar	1	20			20
Project	1	20			20
Homework Assignments	2	10			20
Midterms	1	10			10
Final	1	16			16
Total Workload					**114**