

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:	<div>ECTS</div> <div>5</div>		
Language of instruction:	Turkish		
Course Condition:			
Does the Course Require Work Experience?:	No		
Type of course:	University Elective		
Course Level:	<div> <div>Bachelor</div> <div>TR-NQF-HE:7. Master`s Degree</div> <div>QF- EHEA:Second Cycle</div> <div>EQF-LLL:7. Master`s Degree</div> </div>		
Mode of Delivery:	E-Learning		
Course Coordinator:	Dr. Öğr. Üy. ASLI PINAR ZORBA YILDIZ		
Course Lecturer(s):	Aslı Pinar 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.
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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:	<ul style="list-style-type: none"> • 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:	<ul style="list-style-type: none"> • 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) The graduate integrates the knowledge, skills, attitudes, and behaviours acquired from basic and clinical sciences, behavioural sciences, and social sciences in the form of competencies and uses them for the provision of rational, effective, safe health care services in accordance with quality standards in the prevention, diagnosis, treatment, follow-up, and rehabilitation processes, and during the process considers protection of both patient's health and healthcare workers health including her/his own.								
2) The graduate shows a biopsychosocial approach in patient management that considers the sociodemographic and sociocultural background of the individual without discrimination of language, religion, race, and gender.								
3) The graduate prioritizes the protection and development of the health of individuals and society in the provision of health care services.								
4) The graduate, considering the individual, social, public, and environmental factors affecting health; works towards maintaining								

and improving the state of health. Course Learning Outcomes	1	2	3	4	5	6	7	8
5) In the provision of health care services, the graduate considers both the changes in the physical and socioeconomic environment on a regional and global scale that affect health, as well as the changes in the individual characteristics and behaviours of the people who apply to her/him.								
6) The graduate recognizes the characteristics, needs and expectations of the target population and provides health education to healthy/sick individuals and their relatives and other health care workers.								
7) While carrying out her/his profession, the graduate fulfils her/his duties and obligations with determined behaviours to provide high-quality health care within the framework of ethical principles, rights and legal responsibilities and good medical practices, considering the integrity, privacy, and dignity of the patient.								
8) The graduate evaluates and improves her/his own performance in professional practices in terms of emotions, cognitive characteristics, and behaviours.								
9) The graduate physician advocates improving the provision of health services by considering the concepts of social reliability and social commitment to protect and improve public health.								
10) To protect and improve health, the graduate physician can plan and carry out service delivery, training and consultancy processes related to individual and community health in cooperation with all components.								
11) The graduate physician evaluates the impact of health policies and practices on individual and community health indicators and advocates increasing the quality of health services.								
12) The graduate physician attaches importance to protecting and improving her/his own physical, mental, and social health, and does what is necessary for this.								
13) During the provision of health care, the graduate shows exemplary behaviours and leads within the health team.								
14) The graduate uses the resources cost-effectively, in the planning, implementation, execution, and evaluation processes of the health care services in the health institution she/he manages, for the benefit of the society and in accordance with the legislation.								

Course Learning Outcomes	1	2	3	4	5	6	7	8
15) The graduate communicates positively within the health team with whom she/he provides health care services, being aware of the duties and obligations of other health workers and shows appropriate behaviours to assume different team roles when necessary.								
16) The graduate works harmoniously and effectively with her/his colleagues and other professional groups in her/his professional practice.								
17) The graduate communicates effectively with patients, patient relatives, health care workers and other professional groups, institutions, and organizations, including individuals and groups that require a special approach and have different sociocultural characteristics.								
18) The graduate shows a patient-centred approach in the protection, diagnosis, treatment, follow-up, and rehabilitation processes that involve the patient and patient's caregivers as partners in the decision-making mechanisms.								
19) When necessary, the graduate plans and implements scientific research for the population she/he serves, and uses the results obtained and/or the results of other research for the benefit of the society.								
20) The graduate reaches the current literature information related to her/his profession, evaluates critically, and applies the principles of evidence-based medicine in the clinical decision-making process.								
21) The graduate uses information technologies to improve the effectiveness of her/his work in health care, research, and education.								
22) The graduate effectively manages individual study and learning processes and career development.								
23) The graduate demonstrates the ability to acquire, evaluate, integrate new knowledge with existing knowledge, apply it to professional situations, and adapt to changing conditions throughout professional life.								
24) The graduate chooses the right learning resources to improve the quality of the health care service she/he provides, organizes her/his own learning process.								

Course Learning Outcomes Course - Learning Outcome Relationship		1	2	3	4	5	6	7	8
No Effect	1 Lowest	2 Average			3 Highest				

	Program Outcomes	Level of Contribution
1)	The graduate integrates the knowledge, skills, attitudes, and behaviours acquired from basic and clinical sciences, behavioural sciences, and social sciences in the form of competencies and uses them for the provision of rational, effective, safe health care services in accordance with quality standards in the prevention, diagnosis, treatment, follow-up, and rehabilitation processes, and during the process considers protection of both patient's health and healthcare workers health including her/his own.	
2)	The graduate shows a biopsychosocial approach in patient management that considers the sociodemographic and sociocultural background of the individual without discrimination of language, religion, race, and gender.	
3)	The graduate prioritizes the protection and development of the health of individuals and society in the provision of health care services.	
4)	The graduate, considering the individual, social, public, and environmental factors affecting health; works towards maintaining and improving the state of health.	
5)	In the provision of health care services, the graduate considers both the changes in the physical and socioeconomic environment on a regional and global scale that affect health, as well as the changes in the individual characteristics and behaviours of the people who apply to her/him.	
6)	The graduate recognizes the characteristics, needs and expectations of the target population and provides health education to healthy/sick individuals and their relatives and other health care workers.	
7)	While carrying out her/his profession, the graduate fulfils her/his duties and obligations with determined behaviours to provide high-quality health care within the framework of ethical principles, rights and legal responsibilities and good medical practices, considering the integrity, privacy, and dignity of the patient.	
8)	The graduate evaluates and improves her/his own performance in professional practices in terms of emotions, cognitive characteristics, and behaviours.	
9)	The graduate physician advocates improving the provision of health services by considering the concepts of social reliability and social commitment to protect and improve public health.	

10)	To protect and improve health, the graduate physician can plan and carry out service delivery, training and consultancy processes related to individual and community health in cooperation with all components.	
11)	The graduate physician evaluates the impact of health policies and practices on individual and community health indicators and advocates increasing the quality of health services.	
12)	The graduate physician attaches importance to protecting and improving her/his own physical, mental, and social health, and does what is necessary for this.	
13)	During the provision of health care, the graduate shows exemplary behaviours and leads within the health team.	
14)	The graduate uses the resources cost-effectively, in the planning, implementation, execution, and evaluation processes of the health care services in the health institution she/he manages, for the benefit of the society and in accordance with the legislation.	
15)	The graduate communicates positively within the health team with whom she/he provides health care services, being aware of the duties and obligations of other health workers and shows appropriate behaviours to assume different team roles when necessary.	
16)	The graduate works harmoniously and effectively with her/his colleagues and other professional groups in her/his professional practice.	
17)	The graduate communicates effectively with patients, patient relatives, health care workers and other professional groups, institutions, and organizations, including individuals and groups that require a special approach and have different sociocultural characteristics.	
18)	The graduate shows a patient-centred approach in the protection, diagnosis, treatment, follow-up, and rehabilitation processes that involve the patient and patient's caregivers as partners in the decision-making mechanisms.	
19)	When necessary, the graduate plans and implements scientific research for the population she/he serves, and uses the results obtained and/or the results of other research for the benefit of the society.	
20)	The graduate reaches the current literature information related to her/his profession, evaluates critically, and applies the principles of evidence-based medicine in the clinical decision-making process.	
21)	The graduate uses information technologies to improve the effectiveness of her/his work in health care, research, and education.	
22)	The graduate effectively manages individual study and learning processes and career development.	

23)	The graduate demonstrates the ability to acquire, evaluate, integrate new knowledge with existing knowledge, apply it to professional situations, and adapt to changing conditions throughout professional life.	
24)	The graduate chooses the right learning resources to improve the quality of the health care service she/he provides, organizes her/his own learning process.	

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

