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

# **Course Introduction and Application Information**

Course Code:	TIP045			
Course Name:	Cellular Imn	nunotherapy 2		
Semester:	Fall Spring			
Course Credits:	ECTS			
	2			
Language of instruction:	Turkish			
Course Condition:				
Does the Course Require Work Experience?:	Yes			
Type of course:	Department	al Elective		
Course Level:	Bachelor	TR-NQF-HE:7. Master`s Degree	QF- EHEA:Second Cycle	EQF-LLL:7. Master`s Degree
Mode of Delivery:	Face to face			
Course Coordinator:	Dr. Öğr. Üy. AYCA ZEYNEP İLTER TATAROĞLU			
Course Lecturer(s):	Ayca İlter, Özgür Tataroğlu			
Course Assistants:				

## Course Objective and Content

Course	To give information about the cellular-based and drug- based treatments developed for
Objectives:	immunotherapy as a new generation treatment model for cancer in medicine, and their clinical use
Course	Introduction to immunotherapy, cellular target mechanism of drugs used in immunotherapy, the

Content:	role of genetically modified cells in cellular therapy and cancer treatment, surface markers
	targeted for cancer cells in cellular immunotherapy, side effects of recently developed cellular
	therapies, introduction to cell culture, introduction of equipment and materials used in cell culture,
	gain hands-on experience in cell passaging, counting, and cryopreservation

#### **Learning Outcomes**

The students who have succeeded in this course;

1) To learn about the interaction of the immune system and cancer cells and to learn the mechanism of action developed drugs in a cellular manner

2) Gain knowledge about cancer cell surface markers targeted in cellular therapies

3) Understanding the role of cellular therapies in the treatment of diseases

4) To learn about the role of gene therapy in next generation cellular therapies

5) Putting the learned theoretical knowledge into practice by performing simple cell culture-based laboratory practices

#### **Course Flow Plan**

Week	Subject	Related Preparation
1)	Introduction to immunotherapy	
2)	Drugs used in immunotherapy and their mechanisms at the cellular level	
3)	Treating cancer with engineered immune cells in cancer immunotherapy	
4)	Current methods used in genome modification of immune cells	
5)	Cancer cell surface markers targeted in cellular immunotherapy	
6)	From laboratory bench to clinic bedisde (Side effects of currect cellular therapies)	
7)	Midterm Exam	
8)	Introduction to cell culture techniques	
9)	Contents of reagents used in cell culture and the aim of using those reagents during cell culturing	
10)	Basic equipment used in cell culture laboratory (hoods, laminar hoods, incubators, autoclave) and their working principals (Practical)	
11)	Cell Passaging (Practical Application)	
12)	Cell counting and seeding (Practical Application)	
13)	Cryopreservation of cell (Practical Application)	

14)	TÜBİTAK 2209A Project Preparation and Writing Training	
15)	Final Exam	

#### Sources

Course Notes / Textbooks:	Dersin kaynak kitabı bulunmamaktadır. / The course does not have a mandatory resource.
References:	Konu ile ilgili güncel makaleler/ Recent research papers, literature reviews about the topic

## Course - Program Learning Outcome Relationship

Course Learning Outcomes	1	2	3	4	5
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.	1	2	2	2	2
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.	1	1	1	1	1
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 <b>Course Learning Outcomes</b> , rights and legal responsibilities and good medical	1	2	3	4	5
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 <b>Course Learning Outcomes</b> uses the results ontained and/or the results of other	1	2	3	4	5
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.	1	1	1	1	1
21) The graduate uses information technologies to improve the effectiveness of her/his work in health care, research, and education.	1	1	1	1	1
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 Outcome Relationship

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
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.	1
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 ontained 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.	2
21)	The graduate uses information technologies to improve the effectiveness of her/his work in health care, research, and education.	1
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.	1
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.	2

### Assessment & Grading

Semester Requirements	Number of Activities	Level of Contribution	
Attendance	1	% 10	
Midterms	1	% 40	
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	0	2	15	34	
Laboratory	2	0	2	8	20	
Midterms	1	0	2	2	4	
Final	1	0	2	2	4	
Total Workload						