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

## **Course Introduction and Application Information**

Course Code:	UNI326							
Course Name:	Digital Tech	nologies in Health						
Semester:	Spring Fall							
Course Credits:	ECTS							
	5							
Language of instruction:	Turkish							
Course Condition:								
Does the Course Require Work Experience?:	No							
Type of course:	University E	lective						
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. FATMA NUR ÇİÇİN							
Course Lecturer(s):	Dr.Öğr.Üye	si Fatma Nur ÇİÇİN						
Course Assistants:								

### **Course Objective and Content**

CourseThe aim of this course is for students to gain fundamental knowledge about artificial intelligenceObjectives:and digital technologies in health sciences. The course covers various digital health technologies,<br/>from health informatics systems and AI applications to mobile health solutions and big data<br/>analytics, offering students the opportunity to understand the digital transformation of modern<br/>healthcare. Additionally, students will learn about critical topics such as accessibility, data

	security, and ethical issues in digital health technologies, developing the knowledge and skills necessary to implement these technologies effectively and safely.
Course Content:	The course focuses on the use of digital technologies in the healthcare sector. It begins by covering the fundamentals of health informatics systems, digital transformation, and innovation processes. In this context, students will learn about telemedicine and telehealth applications, gaining an understanding of the role of mobile health and wearable technologies in healthcare services. Students will acquire knowledge about advanced digital technologies such as big data analytics and AI applications, exploring the solutions these technologies offer in the healthcare field.
	In the later stages, the course will cover the use of robotic systems and automation technologies with examples from healthcare services, as well as data security and privacy issues. During this process, students will analyze digital health policies at both national and international levels, assessing their impact on healthcare systems. Additionally, the course will focus on accessibility and universal design principles, emphasizing how digital health services can be made accessible to all individuals.
	In the final sections, interactions with emerging technologies like virtual reality (VR) and augmented reality (AR) will be discussed, and their applications in healthcare will be explored. The course will conclude with student project presentations and a comprehensive evaluation.

#### **Learning Outcomes**

The students who have succeeded in this course;

1) Will be able to work on digital technologies and Artificial Intelligence in health care can express/explain basic knowledge orally/written.

2) Learns how digital transformation and innovation processes in healthcare contribute to the quality and efficiency of healthcare services.

3) Understands how telemedicine and telehealth technologies work and their importance in providing remote healthcare services to patients.

4) Understands the role of mobile health applications and wearable devices in health monitoring and management, and can evaluate these technologies.

5) Technological solution in health care issues with entrepreneurial spirit. develop and implement recommendations.

6) There is a relationship between the concepts of technology, innovation and entrepreneurship.

compare/contrast the connections/similarities and differences can explain.

7) Have the necessary equipment for technology-based projects students bring their ideas to life with innovative and entrepreneurial spirit List/group the basic steps to be able to pass the ethical and legal issues.

8) Have knowledge about Ethical and Legal Issues and to be able to make evaluation,

9) Communication and Collaboration in Health Services

10) Assessment of New Trends and Future Perspectives will be able to do it.

#### **Course Flow Plan**

Week	Subject	Related Preparation
1)	Introduction and Course Introduction	
2)	Overview of Digital Health Technologies	
3)	Electronic Health Records (EHR/EMR)	
4)	Telemedicine and Remote Healthcare Services	
5)	Wearable Technologies in Healthcare	
6)	Mobile Health (m-Health) Applications	
7)	Health Information Systems	
8)	Midterm week	
9)	Artificial intelligence applications in health	
10)	Blockchain and Health Data Security	
11)	Virtual and Augmented Reality (VR/AR) Applications	
12)	Digital Technologies and Ethics in Healthcare	
13)	The Future of Digital Health Technologies	
14)	Final week	

#### Sources

Course Notes / Textbooks:	Ders notları kullanılacak * Ders kitabı zorunlu değil
References:	<ol> <li>Mendi, B. (2023). Sağlık Bilişimi ve Güncel Uygulamalar, Nobel Tıp Kitapevi.</li> <li>Topol, E. J. (2019). High-performance medicine: the convergence of human and artificial intelligence. Nature Medicine, 25(1), 44-56. https://doi.org/10.1038/s41591-018-0300</li> <li>Jiang, F., Jiang, Y., Zhi, H., Dong, Y., Li, H., Ma, S., &amp; Wang, Y. (2017). Artificial intelligence in healthcare: past, present and future. Stroke and Vascular Neurology, 2(4), 230-243.</li> <li>Terry, N. P. (2017). Healthcare and Artificial Intelligence: Legal, Ethical, and Regulatory Perspectives. Harvard University Press.</li> <li>Rivas, H. &amp; Wac, K. (2018). Digital Health: Scaling Healthcare to the World. Springer.</li> <li>Digital Transformation: Build Your Organization's Future for the Innovation Age" - Lindsay Herbert</li> <li>"Healthcare Disrupted: Next Generation Business Models and Strategies" - Jeff Elton, Anne</li> </ol>

'Riordan
8. Sağlık Bilimlerinde Yapay Zekâ. (2019). Melih Bulut, Nevit Dilmen, Gökhan Bora Esmer,
Murat Gezer, Çiğdem Selçukcan Erol, Leyla Türker Şener (Ed.). İstanbul: Çağlayan Kitabevi.
9. Tıp Bilişimi. (2021). Nilgün Bozbuğa, Sevinç Gülseçen. (Ed.). İstanbul: İstanbul University
Press.
10. Sağlıkta İleri Teknoloji. (2019). Mustafa Said Yıldız (Ed.). Ankara: Nobel Yayınevi.

# Course - Program Learning Outcome Relationship

Course Learning Outcomes	1	2	3	4	5	6	7	8	9	10
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.										
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 early population and provides health education to healthy/sick individuals and their relatives and other health care workers.	1	2	3	4	5	6	7	8	9	10
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										

health team with whom she/he provides health care <b>Course Learning Outcomes</b> services, being aware of the duties and obligations of other health workers and shows appropriate behaviours to assume different team roles when necessary.	1	2	3	4	5	6	7	8	9	10
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.										
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 <b>Course Learning Outcomes</b> , organizes thermis own learning process.	1	2	3	4	5	6	7	8	9	10

## 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)	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 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.	
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
Attendance	14	% 10
Midterms	1	% 30
Final	1	% 60
total		% 100
PERCENTAGE OF SEMESTER WORK		% 40
PERCENTAGE OF FINAL WORK		% 60
total		% 100

### Workload and ECTS Credit Calculation

Activities	Number of Activities	Workload
Course Hours	15	45
Study Hours Out of Class	15	30
Quizzes	1	15
Final	2	40
Total Workload	130	