

# ARTIFICIAL INTELLIGENCE IN MEDICINE

<b>1</b>	Course Title:	ARTIFICIAL INTELLIGENCE IN MEDICINE	
<b>2</b>	Course Code:	TIP3191	
<b>3</b>	Type of Course:	Optional	
<b>4</b>	Level of Course:	First Cycle	
<b>5</b>	Year of Study:	3	
<b>6</b>	Semester:	5	
<b>7</b>	ECTS Credits Allocated:	3.00	
<b>8</b>	Theoretical (hour/week):	1.00	
<b>9</b>	Practice (hour/week):	0.00	
<b>10</b>	Laboratory (hour/week):	0	
<b>11</b>	Prerequisites:	None	
<b>12</b>	Language:	Turkish	
<b>13</b>	Mode of Delivery:	Face to face	
<b>14</b>	Course Coordinator:	Dr. Öğr. Üyesi Mevlüt Okan AYDIN	
<b>15</b>	Course Lecturers:	Prof.Dr.Züleyha Alper Doç.Dr.İlker Mustafa Kafa	
<b>16</b>	Contact information of the Course Coordinator:	Öğr. Gör. Dr. Okan Aydın okanaydin@uludag.edu.tr Uludağ Üniversitesi Tıp Fakültesi, USIM, 16059 Nilüfer, Bursa	
<b>17</b>	Website:	<a href="http://bilgipaketi.uludag.edu.tr/Programlar/Detay/28?AyID=30">http://bilgipaketi.uludag.edu.tr/Programlar/Detay/28?AyID=30</a>	
<b>18</b>	Objective of the Course:	Students will be able to; accelerate the processes such as diagnosis and treatment in the clinic and to increase the service assurance of all human malpractice.	
<b>19</b>	Contribution of the Course to Professional Development:	History of artificial intelligence, how to use artificial intelligence, artificial intelligence and malpractice, preparing scenarios with artificial intelligence and reinterpreting data using it,	
<b>20</b>	Learning Outcomes:		
		1	Has knowledge of the basic techniques and methods of artificial intelligence.
		2	Have knowledge of what machine learning systems are and how they work.
		3	Interpret the patient's complaints and symptoms
		4	Can combine and interpret the tests performed with the patient's data.
		5	They can reinterpret the patient's data with artificial intelligence and confirm its accuracy.
		6	They can use artificial intelligence for these purposes and verify its accuracy.
		7	Discuss the ethics of the use of AI in the medical field.
		8	Students can solve a scenario constructed with AI and confirm its accuracy.
		9	
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<b>21</b>	Course Content:		
		<b>Course Content:</b>	

Week	Theoretical	Practice
1	Introduction to artificial intelligence	
2	Machine learning systems	
3	Decide with clinical information (practice)	
4	Clinical decision support systems (practice)	
5	AI-based clinical decision making (practice)	
6	Artificial intelligence in medical diagnosis, treatment selection and monitoring	
7	Artificial intelligence and ethics	
8	Use of artificial intelligence in health (practice)	
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14		

22	Textbooks, References and/or Other Materials:	<p>1.Marc Peter Deisenroth, A. Aldo Faisal, Cheng Soon Ong - Mathematics For Machine Learning (2019, Cambridge University Press) <a href="https://mml-book.github.io/">https://mml-book.github.io/</a></p> <p>2.Linear Algebra and Its Applications, 5th Edition, David C.Lay, Stephen R. Lay, Judi J.McDonald.</p> <p>3. Calculus, A complete course, 9th edition, Robert A.Adams &amp; Christopher Essex.</p> <p>4. Master Algoritma: Yapay Zeka hayatımızı nasıl değiştirecek? Pedro Domingos,</p> <p>5.<a href="https://eithealth.eu/wp-content/uploads/2020/03/EIT-Health-and-McKinsey_Transforming-Healthcare-with-AI.pdf">https://eithealth.eu/wp-content/uploads/2020/03/EIT-Health-and-McKinsey_Transforming-Healthcare-with-AI.pdf</a></p> <p>6.<a href="https://www.nature.com/articles/s41746-021-00385-9">https://www.nature.com/articles/s41746-021-00385-9</a></p> <p>7.<a href="https://ieeexplore.ieee.org/abstract/document/9676651">https://ieeexplore.ieee.org/abstract/document/9676651</a></p> <p>8.<a href="https://aapm.onlinelibrary.wiley.com/doi/full/10.1002/mp.13562">https://aapm.onlinelibrary.wiley.com/doi/full/10.1002/mp.13562</a></p> <p>9.<a href="https://ieeexplore.ieee.org/abstract/document/9429985">https://ieeexplore.ieee.org/abstract/document/9429985</a></p> <p>10.<a href="https://www.nature.com/articles/s41746-020-0221-y">https://www.nature.com/articles/s41746-020-0221-y</a></p> <p>11.<a href="https://www.mdpi.com/2077-0383/11/8/2265">https://www.mdpi.com/2077-0383/11/8/2265</a></p> <p>12.ÖZKAN, Y. ve EROL, Ç., 2018, "Kanser Biyoenformatiğinde Yapay Zeka", ISBN: 978-605-9594-54-7, Papatya Yayıncılık Eğitim A.Ş., İstanbul.</p>
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23	Assesment	
TERM LEARNING ACTIVITIES	NUMBE R	WEIGHT
Midterm Exam	1	40.00
Quiz	0	0.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	2	100.00

Contribution of Term (Year) Learning Activities to Success Grade	40.00
Contribution of Final Exam to Success Grade	60.00
Total	100.00
Measurement and Evaluation Techniques Used in the Course	Measurement and evaluation are carried out according to the principles of Bursa Uludağ University Associate Degree and Undergraduate Education and Training Regulation.

<b>24</b>	<b>ECTS / WORK LOAD TABLE</b>
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Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	1.00	14.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	0	0.00	0.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	1.00	1.00
Others	14	5.00	70.00
Final Exams	1	1.00	1.00
Total Work Load			86.00
Total work load/ 30 hr			2.87
ECTS Credit of the Course			3.00

<b>25</b>	<b>CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS</b>															
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	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	3	2	3	2	2	2	2	2	2	2	3	3	3	3	3	3
ÖK2	3	2	3	2	2	2	2	2	2	2	3	3	3	3	3	3
ÖK3	3	2	3	2	2	2	2	2	2	2	3	3	3	3	3	3
ÖK4	3	2	3	2	3	2	2	2	2	2	4	3	5	4	3	3
ÖK5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
ÖK6	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
ÖK7	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
ÖK8	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

**LO: Learning Objectives PQ: Program Qualifications**

<b>Contribution Level:</b>	<b>1 very low</b>	<b>2 low</b>	<b>3 Medium</b>	<b>4 High</b>	<b>5 Very High</b>
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