KARADENIZ TECHNICAL UNIVERSITY – ENGINEERING FACULTY
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA ENGINEERING
UNDERGRADUATE CURRICULUM

The education period is four years in all departments of KTU Engineering Faculty. There are two semesters in one year, one being autumn and the other being spring. The curriculum applied in the 100% English program of the Department of Artificial Intelligence and Data Engineering is given below for each semester. The meanings of the abbreviations used in the given course list are as follows.

ECTS : European Credit Transfer System, **C :** Credit hour, **H :** Course hour, **A :** Application, **L :** Lab, **E :** Elective, **P :** Prerequisite

Fall Term – 1st Semester

Code	Course Title	ECTS	C	H	A	L	Prerequisite
MATH1011	Mathematics I	5	4	4	0	0	
YDI1001	English I	2	2	2	0	0	
YZ1XXX	Introduction to AI and Data Engineering	2	2	2	0	0	
YZ1XXX	Computer Fundamentals	5	3	3	0	0	
YZ1XXX	Programming I	7	3.5	3	1	0	
PHYS1001	Physics I	5	3.5	3	0	1	
TURK1001	Turkish Language I	2	0	2	0	0	
HIST1001	Ataturk's Principles and History of Revolution I	2	0	2	0	0	
	Total Credit	**30**	**18**	**21**	**1**	**1**	

Spring Term – 2nd Semester

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YDI1002	English II	2	2	2	0	0	
YZ1XXX	Programming II	7	3.5	3	1	0	Programming I
YZ1XXX	Linear Algebra	4	3	3	0	0	
MAT1000	Mathematics II	5	4	4	0	0	
YZ1XXX	Artificial Intelligence Ethics	3	2	2	0	0	
PHYS1001	Physics II	5	3.5	3	0	1	
TURK1000	Turkish Language II	2	0	2	0	0	
HIST1000	Ataturk's Principles and History of Revolution II	2	0	2	0	0	
	Total Credit	**30**	**18**	**21**	**1**	**1**	

Fall Term – 3rd Semester

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZ2XXX	Data Structures	4	3	3	0	0	Programming II
YZ2XXX	Discrete Mathematics	4	3	3	0	0	
YZ2XXX	Object Oriented Programming	5	3.5	3	1	0	Programming II
YZ2XXX	Data Science	5	3	3	0	0	
YZ2XXX	Occupational Health and Safety I	2	2	2	0	0	
YZ3XXX	Artificial Neural Networks	5	3	3	0	0	
MATH2001	Differential Equations	5	4	4	0	0	
	Total Credit	**30**	**21.5**	**21**	**1**	**0**	

Spring Term – 4th Semester

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZ2XXX	Probability and Statistics	4	3	3	0	0	
YZ2XXX	Algorithms	4	3	3	0	0	
YZ2XXX	Automata Theory and Formal Languages	5	3	3	0	0	
YZ2XXX	Engineering Mathematics	5	4	4	0	0	
YZ2XXX	Introduction to Machine Learning	5	3	3	0	0	
YZ2XXX	Image Processing	5	3	3	0	0	
YZ2XXX	Occupational Health and Safety II	2	2	2	0	0	
	Total Credit	**30**	**21**	**21**	**0**	**0**	

Fall Term – 5th Semester

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZ3XXX	Automation and Control	5	3	3	0	0	
YZ3XXX	Deep Learning	6	4	3	0	2	
YZ3XXX	Data Security	5	3	3	0	0	
YZ3XXX	Optimization	5	3	3	0	0	
YZSECXXX	Entrepreneurship	2	2	2	0	0	
YZSECXXX	Technical Elective – 1	5	3	3	0	0	
YZSECXXX	Non-Technical Elective – 1	2	2	2	0	0	
	Total Credit	**30**	**20**	**19**	**0**	**2**	

Spring Term – 6th Semester

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZ2XXX	Information and Coding Theory	5	3	3	0	0	
YZ3XXX	Fundamentals of Robotics	7	4	3	2	0	
YZ3XXX	Natural Language Processing	6	3	3	0	0	
YZ3XXX	Autonomous Systems	5	3	3	0	0	
	Non-Technical Elective – 2	2	2	2	0	0	
	Technical Elective – 2	5	3	3	0	0	
	Total Credit	**30**	**18**	**17**	**2**	**0**	

Fall Term – 7th Semester

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZ4XXX	Multidisciplinary Engineering Applications	2	1	0	2	0	
YZ4XXX	Artificial Intelligence Engineering Design	10	3	2	2	0	
YZ4XXX	Professional Training I	3	0	0	2	0	
YZSECXXX	Technical Elective – 3	5	3	3	0	0	
YZSECXXX	Technical Elective – 4	5	3	3	0	0	
YZSECXXX	Technical Elective – 5	5	3	3	0	0	
	Total Credit	**30**	**13**	**11**	**6**	**0**	

Spring Term – 8th Semester

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZ4XXX	Professional Training II	3	0	0	2	0	
YZ4XXX	Graduation Project	12	3	2	2	0	AI Engineering Design
YZSECXXX	Technical Elective – 6	5	3	3	0	0	
YZSECXXX	Technical Elective – 7	5	3	3	0	0	
YZSECXXX	Technical Elective – 8	5	3	3	0	0	
	Total Credit	**30**	**12**	**11**	**4**	**0**	
	GENERAL TOTAL CREDIT	**240**	**141.5**	**142**	**15**	**4**	

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA ENGINEERING
UNDERGRADUATE CURRICULUM (Elective Courses)

Fall Term – 5th Semester

Non-Technical Elective – 1

Code	Course Title	ECTS	C	H	A	L	Prerequisite
IKT2015	Engineering Economics	3	2	2	0	0	
HUK2009	Basic Law	3	2	2	0	0	
TIP2000	Anatomy	3	2	2	0	0	
USEC0001	History of Science	3	2	2	0	0	
USEC0007	Protection of Personal Data	3	2	2	0	0	
PSY1001	Psychology	3	2	2	0	0	
	Total Credit	**3**	**2**	**2**	**0**	**0**	

Technical Elective – 1

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZSECXXX	Digital Systems	5	3	3	0	0	
YZSECXXX	Operating Systems	5	3	3	0	0	
YZSECXXX	Computer Graphics	5	3	3	0	0	
YZSECXX	Metaverse	5	3	3	0	0	
	Total Credit	**5**	**3**	**3**	**0**	**0**	

Spring Term – 6th Semester

Non-Technical Elective – 2

Code	Course Title	ECTS	C	H	A	L	Prerequisite
ISL3026	Management and Organization	3	2	2	0	0	
HUK3028	Informatics Law	3	2	2	0	0	
FEL3012	Philosophy	3	2	2	0	0	
USEC0010	Project Management	3	2	2	0	0	
USEC0012	Career Planning	3	2	2	0	0	
	Total Credit	**3**	**2**	**2**	**0**	**0**	

Technical Elective – 2

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZSECXXX	Expert Systems	5	3	3	0	0	
YZSECXXX	Database Management Systems	5	3	3	0	0	
YZSECXXX	Introduction to Cloud Computing	5	3	3	0	0	
YZSECXXX	Operation Research	5	3	3	0	0	
YZSECXXX	Microprocessors	5	3	3	0	0	
	Total Credit	**5**	**3**	**3**	**0**	**0**	

Fall Term – 7th Semester

Technical Elective – 3 – 4 – 5

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZSECXXX	Audio Processing	5	3	3	0	0	
YZSECXXX	Big Data Analytics	5	3	3	0	0	
YZSECXXX	UAV Hardware Components and Software	5	3	3	0	0	
YZSECXXX	Game programming	5	3	3	0	0	
YZSECXXX	Fundamentals of Blockchain	5	3	3	0	0	
	Total Credit	**15**	**9**	**9**	**0**	**0**	

Spring Term – 8th Semester

Technical Elective – 6 – 7 – 8

Code	Course Title	ECTS	C	H	A	L	Prerequisite
YZSECXXX	Sound Production and Acoustics	5	3	3	0	0	
YZSECXXX	Artificial Intelligence in Medical Informatics	5	3	3	0	0	
YZSECXXX	Artificial Intelligence in Forensic Sciences	5	3	3	0	0	
YZSECXXX	Data Mining	5	3	3	0	0	
YZSECXXX	Neurofuzzy	5	3	3	0	0	
YZSECXXX	Internet of Things	5	3	3	0	0	
	Total Credit	**15**	**9**	**9**	**0**	**0**	