Course Description	
Course Code	YS 436
Course Name	INTRODUCTION TO DEEP LEARNING
Prerequisite Courses	
Language of the Course	The English
Course Coordinator	
Instructor(s)	
Course Assistants	
The aim of the course	To recognize the basic mechanistic learning concepts required for the solution of engineering problems with deep artificial neural networks; To explain the modular architectures and principles used in network structures based on deep learning; Comparison of bases of learning algorithms used for deep and shallow learning; To realize the solutions of the classification problems through these constructs.
Course Content	Basic linear algebra and numerical calculation, basic probability and information theory, the foundation of machine learning methods, shallow structured networks and shallow learning, deep learning, deep artificial neural networks,

Weekly Course Content	
Week 1	Linear algebra bases
Week 2	Numerical calculation bases
Week 3	Probability and information theory
Week 4	Probability and information theory
Week 5	Machine learning bases
Week 6	Machine learning bases
Week 7	Shallow built network architectures
Week 8	Midterm exam
Week 9	Shallow built network architectures
Week 10	Advanced networking deep network structures
Week 11	Training approaches for deep models
Week12	Training approaches for deep models
Week 13	Convolutional structures
Week 14	Convolutional structures
Week 15	Final exam

Course Learning Outcomes	
1	Having basic knowledge about artificial neural networks
2	Having mastered the language of machine learning
3	Dominate the convolution structure
4	-
5	-
6	-

Contribution of the Course to Program Qualifications		Contribution Level
01	The student will have the ability to apply analytical approach, mathematics and science knowledge in software and engineering issues.	5
02	The student will have the ability to identify, define, formulate and solve a problem in software and computer systems.	4
03	The student will have gains scientific research skills in software and engineering problems, has the ability to design a system, part or process.	4
04	The student will have the ability to use the design capability, techniques and tools required for engineering applications.	4
05	The student will have the ability to design, implement and interpret experimental work and software projects by analyzing the results.	4
06	The student will have the ability to work between disciplines and teamwork.	0
07	The student will have the ability to work in international environments and adapt to different cultures.	5
08	The student will have verbal and written communication skills in Turkish and English.	5
09	The student will have the awareness of the necessity of lifelong learning and the ability to realize it.	4
10	The student will gain knowledge of legal issues with the awareness of professional and ethical responsibility.	5
11	The student will have managerial skills (leadership, organization, time and risk management, quality awareness, efficiency, etc.).	4
12	The student will have the ability to participate in social activities, to acquire regular sports habits and to use time in the best way.	0
13	The student will have the ability to find unusual ways and produce projects.	3
14	The student will have professional self-confidence, being an entrepreneur and taking initiative.	2
15	It is sensitive about the problems of the age and looks after the national interests.	4

ECTS WORKLOAD			
	Number	**Duration (hours)**	**Number*Duration**
Face to face education	14	2	28
Out-of-class study time (pre-study, reinforcement)	0	0	0
Homeworks	3	10	30
Presentation / Seminar preparation	0	0	0
Quizzes	0	0	0
Preparation for midterm exams	0	0	0
midterm exams	1	2	2
Project (Semester assignment)	0	0	0
Lab	0	0	0
field work	0	0	0
Preparation for the final exam	1	5	5
Semester final exam	1	2	2
Research	10	2	20
TOTAL WORKLOAD			**87**
ECTS			**3**

Evaluation		
SEMESTER EVALUATION	**Number**	**Contribution Percentage**
Midterm	1	40
Quiz	0	0
Homework	3	20
SEMESTER TOTAL		**60**
Contribution rate of mid-term evaluations to success		40
Contribution rate of the final exam to success		60

GRAND TOTAL		**100**

RESOURCES	
Textbook	
Helpful Resources	