

COURSE UNIT TITLE : ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS IN INDUSTRY

DEGREE PROGRAMMES

Third Cycle Programmes

(Doctorate Degree)

Second Cycle Programmes

(Master's Degree)

First Cycle Programmes

(Bachelor's Degree)

Short Cycle Programmes

(Associate's Degree)

Description of Individual Course Units

Course Unit Code	Course Unit Title	Type Of Course	D	U	L	ECTS
IND 3938	ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS IN INDUSTRY	ELECTIVE	3	0	0	4

Offered By

Industrial Engineering

Level of Course Unit

First Cycle Programmes (Bachelor's Degree)

Course Coordinator

ASSOCIATE PROFESSOR FEHMI BURÇIN ÖZSOYDAN

Offered to

Industrial Engineering

Course Objective

This course aims to provide the students of the Department of Industrial Engineering with important artificial intelligence topics such as Artificial Neural Networks, Deep Learning, Hyper-heuristic learning and their production systems and mobile applications that have a very important place in engineering science. Thus, it is aimed to achieve professional gains in accordance with the Industry 4.0 era.

Learning Outcomes of the Course Unit

- 1 To understand the concept and importance of artificial intelligence
- 2 To be able to design, train and use artificial neural networks
- 3 To acquire the concept of Deep Learning
- 4 To acquire the concept of hyper-heuristic learning
- 5 To be able to use different artificial intelligence algorithms to train artificial neural networks
- 6 To have knowledge about machine learning

Mode of Delivery

Face -to- Face

Prerequisites and Co-requisites

None

Recommended Optional Programme Components

None

Course Contents

Week	Subject	Description
1	Introduction to artificial intelligence: what is artificial intelligence, what are its uses	

- 2 To comprehend the differences in the classification of artificial intelligence
- 3 Introduction to artificial neural networks
- 4 Artificial neural network model (supervised learning)
- 5 Artificial neural network model (supervised learning)
- 6 Multilayer artificial neural network model (supervised learning)
- 7 Neuroevolutionary algorithms
- 8 Neuroevolutionary algorithms
- 9 Midterm
- 10 Introduction to deep learning
- 11 Deep learning practices
- 12 Hyper-heuristic learning
- 13 Machine learning
- 14 Machine learning
- 15 Term project presentations

Recommended or Required Reading

Haykin, S., (2008) Neural Networks and Learning Machines, McMaster University, Hamilton, Ontario, Canada, ISBN-13: 978-0-13-147139-9, ISBN-10: 0-13-147139-2

Öztemel, E., (2016) Yapay Sinir Ağları, Papatya Yayıncılık

Çakır, F.S. (2018) Yapay Sinir Ağları, Matlab Kodları ve Matlab Toolbox Çözümleri, Nobel Akademik Yayıncılık, ISBN: 9786057928122

Rençberi Ö.F. (2018) Sınıflandırma Problemlerinde Çoklu Lojistik Regresyon, Yapay Sinir Ağ ve ANFIS Yöntemlerinin Karşılaştırılması: İnsani Gelişmişlik Endeksi Üzerine Uygulama, Gazi Kitabevi ISBN: 6053446699

Planned Learning Activities and Teaching Methods

The topics covered in the course will be transferred to the students through computer-based applications, sample problem solutions and presentations on the board and students will be expected to perform these applications. The course will involve intensive coding. In addition, all the techniques described in this course will be brought together and used.

Assessment Methods

SORTING NUMBER	SHORT CODE	LONG CODE	FORMULA
1	MTE	MIDTERM EXAM	
2	ASG	ASSIGNMENT	
3	FIN	FINAL EXAM	
4	FCG	FINAL COURSE GRADE	$MTE * 0.20 + ASG * 0.30 + FIN * 0.50$
5	RST	RESIT	
6	FCGR	FINAL COURSE GRADE (RESIT)	$MTE * 0.20 + ASG * 0.30 + RST * 0.50$

*** Resit Exam is Not Administered in Institutions Where Resit is not Applicable.

Further Notes About Assessment Methods

None

Assessment Criteria

Midterm (20%) + Project (30%) + Final Exam (50%)

Language of Instruction

English

Course Policies and Rules

To be announced.

Contact Details for the Lecturer(s)

Adress: Dokuz Eylül University, Industrial Engineering Department, Tınaztepe Campus, İzmir, Türkiye

E-mail: burcin.ozsoydan@deu.edu.tr, burcin.ozsoydan@gmail.com

Tel: 0232 301 7630

Office Hours

To be announced.

Work Placement(s)

None

Workload Calculation

Activities	Number	Time (hours)	Total Work Load (hours)
Lectures	12	3	36
Tutorials	0	0	0
Preparations before/after weekly lectures	12	1	12
Preparation for midterm exam	1	15	15
Preparation for final exam	1	20	20
Preparation for quiz etc.	0	0	0
Preparing presentations	1	15	15
Final	1	2	2
Midterm	1	2	2
Quiz etc.	0	0	0
TOTAL WORKLOAD (hours)			102

Contribution of Learning Outcomes to Programme Outcomes

PO/LO	PO.1	PO.2	PO.3	PO.4	PO.5	PO.6	PO.7	PO.8	PO.9	PO.10	PO.11	PO.12
LO.1	5	3	3	5	4			4		3	5	5
LO.2	5		3	4	5					4		5
LO.3	5		5	5	5							
LO.4	5		4	4	5							
LO.5	5		3	5	5			3				
LO.6	5	2	5	4	3	4			3		4	5

CONTACT INFORMATION

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ENGLISH TÜRKÇE