Akdeniz University

Rektörlük
Rektörlük Servis

ENF 126	Artificial Intelligence Based Analytical Approaches				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
1	ENF 126	Artificial Intelligence Based Analytical Approaches	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Rektörlük Servis
Type of Course Unit:
Elective
Objectives of the Course:
The aim of this course is to enable students from different disciplines (economics, marketing, econometrics, agricultural machinery, etc.) to learn artificial intelligence-based data analytics methods in depth and to acquire advanced modeling skills using low-code platforms that do not require current coding. The aim is to enable students to develop responsible data analytics practices that transfer the theoretical foundations they have acquired to real-life scenarios, while also considering ethical and legal dimensions. The goal is for students to transfer the theoretical foundations they have acquired to real-life scenarios and develop responsible data analytics applications that also take into account ethical and legal dimensions.
Content of the Course:
This course covers topics such as data preparation, feature engineering, analytics platforms that do not require coding, advanced model evaluation metrics, time series analysis, industry-specific applications (marketing, econometrics, agriculture, etc.), artificial intelligence-based decision support systems, ethical and legal regulations, MLOps, and model lifecycle. Throughout the course, students will reinforce their theoretical knowledge with project-based applications and experience the entire process of an analytical solution, from the idea stage to implementation.
Prerequisites and co-requisities:

Course Coordinator:
Instructor Ramazan UYAR
Name of Lecturers:
Instructor Dr. Evren SEZGİN
Assistants:

Recommended or Required Reading

Resources

Russell, S. & Norvig, P. (2016). Yapay Zeka: Modern Bir Yaklaşım.
Yapay zeka ve etik üzerine güncel makaleler, internet kaynakları, web tabanlı araçlar dokümanları (ChatGPT, Teachable Machine vb.)
Course notes, application documents, and sample datasets prepared by the instructor will be used throughout the course.
Ders Notları
Bir Ödev
Vize- Final

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	10
Engineering	:	10	**Science**	:	10
Engineering Design	:	10	**Health**	:	10
Social Sciences	:	10	**Field**	:	30

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to AI-Based Analytics: Overview of analytical concepts, the relationship between artificial int		
2	Data Preparation and Feature Engineering: Data cleaning, handling missing data, feature engineering, an		
3	No-Code Analytics and Model Development Platforms: Introduction to platforms such as DataRobot, Rapi		
4	Classical ML Tasks: Classification and Regression: Decision trees, random forests, logistic regression, XGB		
5	Time Series Analytics: Time series structures and basic analysis methods (ARIMA, SARIMA, etc.). Econom		
6	Advanced Model Evaluation Metrics: Classification metrics (sensitivity, specificity, ROC-AUC, F1 score) and		
7	Sectoral Applications – Economics and Econometrics: Macroeconomic forecasting (inflation, interest rates,		
8	Sectoral Applications – Marketing: Customer segmentation, customer lifetime value (CLV) analysis, sales a		
9	Sectoral Applications – Agriculture and IoT Sensor Data: Image processing, soil and climate analysis, prec		
10	Ethics, Data Security, and Legal Regulations: Bias and discrimination issues in AI applications, data privac		
11	MLOps and Model Lifecycle Management: Model integration, continuous monitoring, version control, drift		
12	Project Studies – Data Preparation and Analysis Design: Group/individual projects involving dataset select		
13	Project Studies – Modeling and Evaluation: Model setup, parameter optimization, and performance compa		
14	Project Presentations and General Evaluation: Presentation of project results, evaluation of findings, enco		

Course Learning Outcomes

No	Learning Outcomes
C01	Will be able to apply advanced methods for fundamental data preparation processes such as data cleaning, transformation, and feature engineering.
C02	Will be able to build models using different algorithms on no-code or low-code analytics platforms and evaluate their performance.
C03	Will be able to design AI-based data analytics projects and develop solution proposals for different sectors such as economics, marketing, econometrics, and agriculture.
C04	Will be able to apply advanced model evaluation metrics (F1, AUC, R^2, RMSE, MAPE, etc.), select optimal models, and develop strategies to improve model performanc
C05	Will be able to develop a responsible analytical approach by considering ethics, legal regulations, and data security issues in AI-based applications.

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	14	4	56
Hours for off-the-c.r.stud	14	2	28
Assignments	1	10	10
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	16	16
Total Work Load			**120**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes
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