Course Syllabus

Code - Course Title	**BVA225 - Feature Engineering**
Course Type	III. SEMESTER
Laboratory + Practice	2+1
ECTS	**3.0**
Language of Instruction	Türkçe
Course Type	Area Elective Courses
Course Instructor(s)	ÖĞR. GÖR. AHMET MÜCAHİD ARVASİ

Mode of Delivery	Face-to-Face
Prerequisites	There are no prerequisites or corequisites for this course.

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Introduction to Feature Engineering and Data Preparation Process	
Week - 2		Exploratory Data Analysis (EDA) and Understanding Raw Data	
Week - 3		Handling Missing Data (Imputation Techniques)	
Week - 4		Encoding Categorical Variables: One-Hot, Label, and Target Encoding	
Week - 5		Processing Continuous Variables: Scaling, Normalization, and Standardization	
Week - 6		Outlier Detection, Clipping, and Processing Methods	
Week - 7		Generating New Features from Existing Ones and Polynomial Features	
Week - 8		Midterm Exam	
Week - 9		Feature Extraction from Text and Date/Time Data	
Week - 10		Feature Selection 1: Filter and Wrapper Methods	
Week - 11		Feature Selection 2: Embedded Methods and Regularization (L1/Lasso)	
Week - 12		Dimensionality Reduction Techniques: Principal Component Analysis (PCA) and SVD	
Week - 13		Automated Feature Engineering Concepts and Tools	
Week - 14		Student Project Applications in Classification, Regression, and Clustering Models	

Learning Outcomes

#	Learning Outcome
1	-Students can identify missing values, outliers, and inconsistencies in datasets and make them suitable for machine learning models. -They can generate new and meaningful features from existing data by applying mathematical and statistical transformations to maximize model performance. -They can successfully apply appropriate feature selection and dimensionality reduction algorithms to deal with the curse of dimensionality. - They can design and execute automated feature engineering (AutoFE) processes end-to-end on large and complex data.

Sustainable Development Goals

No content has been provided.

Course Theme

No content has been provided.

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	0	0	0
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	0	0	0
Ödevler	0	0	0
Proje - Rapor - Sunum Hazırlama	0	0	0
Ara Sınav Hazırlığı (sınav süresi dahil)	0	0	0
Final Sınavı Hazırlığı (sınav süresi dahil)	0	0	0
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0	0	0
Staj Uygulaması	0	0	0
		Calculated ECTS	**0**

Assessment Method and Passing Requirements

No content has been provided.