Course Syllabus

Code - Course Title	**VBA301 - Machine Learning II: Unsupervised Learning**
Course Type	V. SEMESTER
Laboratory + Practice	3+1
ECTS	**6.0**
Language of Instruction	İngilizce
Course Type	Required Courses
Course Instructor(s)	DR. ÖĞR. ÜYESİ ÖNDER DORAK

Mode of Delivery	Face to face

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Unsupervised Learning: Pattern discovery concepts	
Week - 2		Clustering concepts overview	
Week - 3		Clustering algorithms: Implementing k-means and k-medoids	
Week - 4		Hierarchical clustering methodologies	
Week - 5		Density-based spatial clustering (DBSCAN)	
Week - 6		Dimensionality Reduction: PCA theory	
Week - 7		PCA application and t-SNE for visualization	
Week - 8		UMAP and Factor analysis	
Week - 9		Association Rules: The Apriori algorithm	
Week - 10		Market basket analysis	
Week - 11		Evaluating support/confidence/lift parameters	
Week - 12		Building fundamental recommendation systems	
Week - 13		Anomaly Detection: Identifying outliers	
Week - 14		Isolation forests, One-class SVMs, Fraud detection	

Learning Outcomes

#	Learning Outcome
1	Implement K-Means and hierarchical clustering algorithms
2	Apply PCA and t-SNE for dimensionality reduction

Learning Outcomes

#	Learning Outcome
3	Evaluate association rules for recommendation systems
4	Detect anomalies using high-dimensional data techniques

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.