Course Syllabus

Code - Course Title	**BVA220 - Social Network Analysis**
Course Type	IV. 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 Social Network Analysis, Basic Concepts, Network Data Collection Methods, and Network Sampling Techniques	
Week - 2		Network Centrality Measures: Degree, Betweenness, Closeness, and Eigenvector Centrality	
Week - 3		Network Visualization Techniques and Graph Representation with Tools (Gephi, NetworkX, igraph)	
Week - 4		Community Detection Algorithms, Modularity, and Clustering	
Week - 5		Statistical Network Modeling: Exponential Random Graph Models (ERGM)	
Week - 6		Actor-Oriented Models and Analysis of Individual Behaviors within the Network	
Week - 7		Network Dynamics, Network Evolution, and Longitudinal Network Analysis	
Week - 8		Midterm Exam	
Week - 9		Multilevel and Multiplex Network Analysis	
Week - 10		Influence and Diffusion in Networks: Information Diffusion, Epidemic Models, and Rumor Spreading	
Week - 11		Network Robustness, Resilience, and Network Failure Analyses	
Week - 12		Introduction to Network-Based Machine Learning: Node Classification, Link Prediction, and Graph Neural Networks (GNN)	
Week - 13		Network Ethics and Privacy Issues: Data Privacy, Anonymization in Social Networks, and Ethical Violations	
Week - 14		Advanced Applications: Case Studies with Real-World Data and End-of-Term Project Presentations	

Learning Outcomes

#	Learning Outcome
1	Upon successful completion of this course, students will be able to perform data collection, sampling, and centrality measurements using advanced social network analysis techniques, clearly model complex datasets with network visualization tools, conduct statistical network analyses using Exponential Random Graph Models (ERGM) and actor-oriented models, test community detection, information diffusion, and network robustness scenarios on longitudinal and multilevel network structures, and develop comprehensive projects on real-world case studies while observing data privacy and network ethics standards when designing network-based machine learning applications (e.g., link prediction).

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.