Course Syllabus

Code - Course Title	**BVA221 - Natural Language Processing**
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 Natural Language Processing, Basic Concepts, and Elements of Language	
Week - 2		Regular Expressions and Text Preprocessing (Tokenization, Stemming, Lemmatization)	
Week - 3		Syntactic Analysis and Morphology	
Week - 4		Introduction to Language Models and N-Gram Models	
Week - 5		Statistical Natural Language Processing: Probability Theory and Naive Bayes Classifier	
Week - 6		Text Representation and Vector Space Models: TF-IDF (Term Frequency - Inverse Document Frequency)	
Week - 7		Finding Similarities Between Texts: Cosine Similarity and Jaccard Index	
Week - 8		Midterm Exam	
Week - 9		Text Classification Applications with Machine Learning (Sentiment Analysis, Spam Detection)	
Week - 10		Text Clustering and Topic Modeling (LDA)	
Week - 11		Introduction to Word Embeddings Models: Word2Vec and GloVe	
Week - 12		Statistical and Extractive Text Summarization Techniques	
Week - 13		Integration and Optimization of Machine Learning Algorithms (SVM, Decision Trees) on Text	
Week - 14		Application of NLP Algorithms on Real-World Data and End-of-Term Project Presentations	

Learning Outcomes

#	Learning Outcome
1	Upon successful completion of this course, students will reach the competence to understand the processes from the production to the comprehension of languages and apply syntactic analysis methods, perform text preprocessing steps and analyze language with statistical and probabilistic approaches, conduct text representation and text similarity calculations using vector space models like TF-IDF, and successfully design fundamental natural language processing tasks such as text classification, topic modeling, and text summarization by integrating machine learning algorithms into natural language 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.