

## Introduction to Natural Language Processing (NLP)

**Course description:** This course aims to provide students an introductory-level of knowledge in natural language processing and required skills to build models for their specific use cases.

**Pre-requisites:** No coding experience or any knowledge about NLP required.

**Instructor:** Dr. Gizem Gezici

The preliminary schedule is as follows.

Day	Place	Topic Main Lecture	Topic Hands-on Lectures
<b>20 May Mon</b> <b>11.00-13.00</b>	Aula Mancini	<b>What is NLP?</b>	
<b>22 May Wed</b> <b>11.00-13.00</b>	Aula Bianchi Scienze	<b>Fundamentals of NLP</b> <ol style="list-style-type: none"> <li>1. Tokenization</li> <li>2. Stemming &amp; Lemmatization</li> <li>3. Part-of-Speech Tagging (POSTagging)</li> <li>4. Named Entity Recognition (NER)</li> </ol>	
<b>27 May Mon</b> <b>11.00-13.00</b>	Aula Mancini		<b>Hands-on:</b> Interactive session on Fundamentals of NLP <ul style="list-style-type: none"> <li>- High-level pipeline using learning platforms (KNIME or RapidMiner)</li> <li>- Coding session using popular NLP Libraries in Python (NLTK, spaCy, CoreNLP)</li> </ul>
<b>28 May Tue</b> <b>11.00-13.00</b>	Aula Contini	<b>Sample Text Processing Pipeline</b> <ol style="list-style-type: none"> <li>1. Dataset Preprocessing</li> <li>2. Feature Extraction <ol style="list-style-type: none"> <li>a. BoWs,</li> <li>b. tf*idf,</li> <li>c. N-grams</li> </ol> </li> <li>3. Text Representation <ol style="list-style-type: none"> <li>a. Frequency-based (Co-occurrence matrices)</li> <li>b. Prediction-based (Word embeddings)</li> </ol> </li> </ol> <p><b>Use case:</b> Going through the main steps of the introduced overall of text processing pipeline (w/ sample sentences and code pieces)</p>	

<b>3 June Mon</b> <b>11.00-13.00</b>	Aula Mancini		<b>Hands-on:</b> Interactive session on an NLP Application - <b>Sentiment Classification</b> <ul style="list-style-type: none"> <li>- Introducing the high-level pipeline</li> <li>- Coding session in Python</li> </ul>
<b>5 June Wed</b> <b>11.00-13.00</b>	Aula Bianchi Scienze	<b>Short Discussion on LLMs</b> <ol style="list-style-type: none"> <li>1. Introduction to LLMs</li> <li>2. Pros &amp; cons of LLMs</li> <li>3. Ethical issues about LLMs</li> </ol>	
		<b>Exam:</b> TBD	