

## Natural Language Processing (A704066)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 5.0**

**Study time 150 h**

**Course offerings and teaching methods in academic year 2024-2025**

A (semester 2)

English

Gent

independent work  
lecture

**Lecturers in academic year 2024-2025**

Hoste, Veronique

LW22

lecturer-in-charge

Tezcan, Arda

LW22

co-lecturer

Van Hee, Cynthia

LW22

co-lecturer

**Offered in the following programmes in 2024-2025**

**crdts**

**offering**

Master of Arts in Technology for Translation and Interpreting

5

A

Master of Arts in Advanced Studies in Linguistics (main subject Natural Language Processing: Theory and Practice)

6

A

Master of Arts in Advanced Studies in Linguistics (main subject Natural Language Processing: Theory and Practice)

6

A

Postgraduate Certificate Computer-Assisted Language Mediation

5

A

**Teaching languages**

English

**Keywords**

Natural language processing, computational linguistics, language and AI

**Position of the course**

In this course, we cover the fundamentals of natural language processing. We learn how algorithms can be used to teach computers artificial language understanding. Given the ambiguity of language, we start our discussion at the morphological and word level, building up via the syntactic level, to end with the complexity of semantic and discourse modeling. Different applications (sentiment analysis, emotion detection, information extraction, dialog systems and chatbots) are discussed as well as some predominant methodologies (machine learning, deep learning) and evaluation metrics.

**Contents**

**Topics:**

- Regular expressions, text normalization, edit distance, dynamic programming
- Lexical level: n-gram language models; vector semantics
- Syntactic level: part-of-speech tagging and syntactic parsing
- Semantic level: word sense disambiguation, LSA, semantic role labeling, coreference resolution
- Machine learning: traditional approaches versus neural networks
- Applications: information extraction, sentiment analysis and emotion detection, dialog systems and chatbots

**Initial competences**

Basic computer skills

**Final competences**

- 1 Have a basic knowledge on natural language processing (NLP) and artificial intelligence (AI) and understand the research challenges and the societal impact of NLP.

- 2 Ability to critically reflect on the state of the art in NLP.
- 3 Have the basic skills to conceive a NLP system from scratch and to interpret its results.

**Conditions for credit contract**

This course unit cannot be taken via a credit contract

**Conditions for exam contract**

This course unit cannot be taken via an exam contract

**Teaching methods**

Lecture, Independent work

**Extra information on the teaching methods**

Combined oral lectures and practical classes.

**Study material**

Type: Slides

Name: Natural Language Processing

Indicative price: Free or paid by faculty

Optional: no

Available on Ufora : Yes

**References**

Daniel Jurafsky & James Martin, "Speech and Language Processing. An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition" (ed3).

**Course content-related study coaching**

Individual coaching after class or after appointment with the tutor.

**Assessment moments**

continuous assessment

**Examination methods in case of periodic assessment during the first examination period****Examination methods in case of periodic assessment during the second examination period****Examination methods in case of permanent assessment**

Skills test, Written assessment open-book

**Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible

**Extra information on the examination methods**

- Skills test: the students will have to complete a number of assignments throughout the course for which they receive a key solution. The final result depends on the completion of the assignments.
- Written open book exam

**Calculation of the examination mark****Permanent evaluation:**

- Skills test (10%)
- Written open book exam (90%)

**Second session:**

- Written open book exam (100%)

**Facilities for Working Students**

Class attendance is strongly recommended.

Limited possibility of feedback via e-mail, restricted to answering specific questions.