

# Introduction to Natural Language Processing

Organizational Information

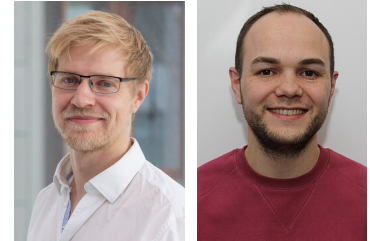
Henning Wachsmuth

<https://ai.uni-hannover.de>

# Organizational Information

## Bachelor course

- **Lectures.** Henning Wachsmuth
- **Tutorials.** Timon Ziegenbein
- **Languages.** English, Python



## Information

- **Web.** <https://www.ai.uni-hannover.de/de/teaching/courses/inlp>
- **Stud.IP.** [https://studip.uni-hannover.de/dispatch.php/course/details?sem\\_id=5f8b5db3f059da62df82c8f42617ac83](https://studip.uni-hannover.de/dispatch.php/course/details?sem_id=5f8b5db3f059da62df82c8f42617ac83)

## Time and location

- **Lectures.** Thursday 13:00–14:30, 3702-031 (Schneiderberg 32)
- **Tutorials.** Tuesday 10:30–12:00, 1101-F138 (Welfengarten 1)  
First tutorial introduces Python and the assignment concept

## Consultation?

- Set up appointment via e-mail: [h.wachsmuth@ai.uni-hannover.de](mailto:h.wachsmuth@ai.uni-hannover.de)

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Teaching at NLP Group, <https://ai.uni-hannover.de/en/studies/courses>

## Courses

- **Introduction to Natural Language Processing (bachelor, summer)**. NLP fundamentals, from rule-based methods to statistical methods
- **Statistical Natural Language Processing (master, winter)**. Core NLP, from statistical methods to neural methods
- **Computational Argumentation (master, summer)**. State-of-the-art NLP, advanced methods in a specific research context

## Seminars

- Natural Language Processing (bachelor, winter)
- Natural Language Generation (master, summer)

## Labs and projects

- Argumentation Technology (master, summer)
- Human Language Technology (master, winter)

# Organizational Information

## This Course

### Overall goals

- Learn major skills needed to approach fundamental NLP tasks.
- Understand the basics that state-of-the-art NLP builds upon.

### Contents

- Several rule-based and statistical NLP techniques
- Several NLP tasks and approaches
- Required basics of linguistics and empirical methods

### Competences

- Understanding of theory and practice of NLP
- Design and implementation of NLP methods for given tasks
- Scientific experiments and evaluations on large amounts of text

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## Outline of the Course

### Introduction

1. Overview

### Modeling expert knowledge

2. Basics of linguistics
3. NLP using rules
4. NLP using lexicons

### Modeling statistical patterns

5. Basics of empirical methods
6. NLP using grammars
7. NLP using language models
8. NLP using clustering

### Application

9. Practical issues

# Organizational Information

## Course Elements

### Teaching in presence

- **Lectures.** Presentation of course content and organizational info
- **Tutorials.** Presentation of assignments and solutions, Q&A

Note: While the slides cover all content, detailed explanations are given in person only.

### Home assignment sheets (details in first tutorial)

- **Amount.** 5 in total, bi-weekly (~50% written, ~50% programming)
- **Group work.** You need to submit with 3–4 people
- **Bonus.** (a) Min. 60% of all points: exam grade + 1/3, (b) Min. 85%: + 2/3  
Only grades < 5.0 can be improved; example for (b): grade of 2.7 is changed to 2.0.
- **Note: Unconsiderate AI use has led to notably higher fail rates recently!**

### Written exam

- 90 minutes, English, exercises on all lecture parts, first exam: August 5
- **Registration.** May 15–31, 2026

More details on the exam later

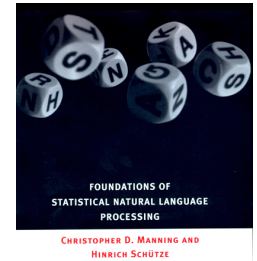
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## Textbooks (Not Obligatory)

### Foundations of Statistical Natural Language Processing

(Manning and Schütze, 1999)

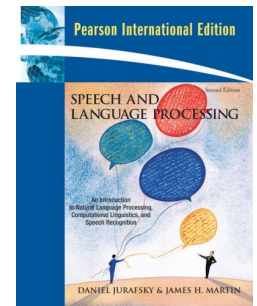
- More oriented toward computer science
- Profound basics, outdated techniques



### Speech and Language Processing, 2nd edition

(Jurafsky and Martin, 2009)

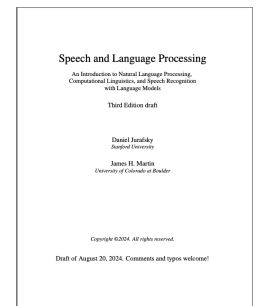
- More oriented toward computational linguistics
- Comprehensive, neural techniques not covered



### Speech and Language Processing, draft of 3rd edition

(Jurafsky and Martin, 2026) → **draft freely available online**

- More oriented toward computational linguistics
- Comprehensive, up-to-date, excellently written



# References

- **Jurafsky and Martin (2009)**. Daniel Jurafsky and James H. Martin. Speech and Language Processing: An Introduction to Natural Language Processing, Speech Recognition, and Computational Linguistics. 2nd edition, Prentice-Hall, 2009.
- **Jurafsky and Martin (2026)**. Daniel Jurafsky and James H. Martin. Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition with Language Models, 3rd edition. Online manuscript released January 6, 2026.  
<https://web.stanford.edu/~jurafsky/slp3/>
- **Manning and Schütze (2009)**. Christopher D. Manning and Hinrich Schütze. Foundations of Statistical Natural Language Processing. MIT Press, 1999.