## Module description

<table>
<thead>
<tr>
<th>Module title</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Machine learning for Natural Language Processing</td>
<td>10-l=NLP-182-m01</td>
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### Module coordinator

Dean of Studies Informatik (Computer Science)  
Institute of Computer Science

### ECTS

<table>
<thead>
<tr>
<th>Duration</th>
<th>Module level</th>
<th>Other prerequisites</th>
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<tbody>
<tr>
<td>1 semester</td>
<td>undergraduate</td>
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### Contents

The lecture conveys advanced knowledge about methods in computational text processing. To this end, it presents state of the art models and techniques in the area of machine learning, as well as their technical background, and their respective applications in Natural Language Processing. As one important building block of almost all modern NLP-models, different techniques for learning representations of words, so called Word Embeddings, are presented. Starting from this we cover, among others, models from the area of Deep Learning, like CNNs, RNNs and Sequence-to-Sequence architectures. The theoretical foundations of these models, like their training with Backpropagation, are also covered in depth. For all models presented in the lecture, we show their application to problems like sentiment analysis, text generation and machine translation in practice.

### Intended learning outcomes

The participants have solid knowledge on problems and methods in the area of computational text processing and are able to identify and apply suitable methods for a specific task.

### Courses

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of weekly contact hours</th>
<th>Language</th>
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<tbody>
<tr>
<td>V</td>
<td>2</td>
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<td>Ü</td>
<td>2</td>
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### Method of assessment

- written examination (approx. 60 to 120 minutes).
- If announced by the lecturer at the beginning of the course, the written examination may be replaced by an oral examination of one candidate each (approx. 20 minutes) or an oral examination in groups of 2 candidates (approx. 15 minutes per candidate).
- Language of assessment: German and/or English creditable for bonus

### Allocation of places

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### Additional information

Focuses available for students of the Master’s programme Informatik (Computer Science, 120 ECTS credits): AT, IS, HCI.

### Referred to in LPO I

(examination regulations for teaching-degree programmes)

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### Module appears in

- Master’s degree (1 major) Computer Science (2018)
- Module studies (Master) Computer Science (2019)
- Master’s degree (1 major) Computational Mathematics (2019)
- Master’s degree (1 major) Mathematics (2019)
- Master’s degree (1 major) (2019)