

<b>Module name:</b>		<b>Module code</b>
Natural Language Processing		NLP
<b>Responsible for the module</b>	<b>Faculty</b>	
Prof. Dr. Timo Baumann	Computer Science and Mathematics	

<b>Semester of study</b>	<b>Year of study</b>	<b>Module type</b>	<b>Credit points</b>
			[ECTS-Credits]
6. / 7.	3.	compulsory module	5

<b>Compulsory prerequisites</b>
Successful completion of all examinations of the 1st study section At least 100 credits from the 1st and 2nd study sections
<b>Recommended prior knowledge</b>
<ul style="list-style-type: none"> <li>• Programming 1</li> <li>• Programming 2</li> <li>• Algorithms and Data Structures</li> <li>• Fundamentals of Computer Science 1</li> <li>• Basics of Computer Science 2</li> <li>• Statistics and Probability Theory</li> </ul>

<b>Content</b>
see following section

**Assigned submodules:**

<b>Nr.</b>	<b>Designation of the sub-modules</b>	<b>Scope of teaching</b>	<b>Credit points</b>
		[SWS or UE]	[ECTS-Credits]
1.	Natural Language Processing	4 SWS	5
<b>Sub-module</b>			<b>TM- abbreviation</b>
Natural Language Processing			NLP
<b>Responsible</b>		<b>Faculty</b>	
Prof. Dr. Timo Baumann		Computer Science and Mathematics	
<b>Lecturer(s)</b>		<b>Course frequency</b>	
Prof. Dr. Timo Baumann			
<b>Teaching form</b>			
Seminars (2 SWS) and exercises (2 SWS)			

Semester according to study plan	Scope of teaching [SWS or UE]	Teaching language	Credit points [ECTS-Credits]
6. / 7.	4 SWS	English	5

**Time required:**

Study in attendance	Private study
60 h	90 h

Course and examination achievement
Written examination – 90 minutes.

Contents
<ul style="list-style-type: none"> <li>• Sub-areas of language processing and their associated symbolic algorithmic procedures: Morphology, syntax, semantics, word sequences and whole documents.</li> <li>• Use cases of language processing, e.g. search, classification, comprehension and generation of documents and language interactions.</li> <li>• Understanding of how to handle and collect language data for validation and if necessary, training of data-based methods.</li> <li>• Neural network methods for data-based modelling of language.</li> </ul>

Learning objectives: Subject competence
<p>After successful completion of the submodule, students are able to:</p> <ul style="list-style-type: none"> <li>• distinguish the different linguistic levels (1) and explain their interrelationships in the linguistic system (2).</li> <li>• to implement simple procedures of language processing or to use more complex ones and, if necessary, train them on the basis of data (2).</li> <li>• evaluate the performance of procedures with reference to selected applications (2).</li> <li>• assess the specific challenges of processing speech data and to select appropriate procedures from the main existing ones appropriate to the task (3).</li> </ul>

## **Learning objectives: Personal competence**

After successful completion of the submodule, students are able to:

- work on tasks in language processing or a comparable problem area (2).
- to familiarise themselves with a new field or new methods under guidance (3).
- discuss tasks in small groups (2), develop and implement solution strategies (3), present results to an audience (2) and to constructively criticise alternative approaches (3).

## **Teaching media**

Presentation slides, minutes of discussions, references and sample solutions.

## **Literature**

To be determined by the lecturers.

## **Further information on the course**

The topics of the project work are assigned by the lecturer at the beginning of the semester.

The numbers in brackets indicate the levels to be achieved: 1 - know, 2 - can, 3 - understand and apply.