



Teaching Computational Linguistics / NLP / Language Technologies at MFF

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Computational Linguistics / NLP at Bachelor level at MFF

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current situation (last cohort of students 2018/19)

- 3 different BSc programmes, ECTS credit system:
- **General Computer Science**, with 3 specialisations:
 - Algorithms and Optimization
 - Discrete Models and Structures
 - **Computational Linguistics**
 - one examination area for state exams
 - possibility to supervise bachelor theses
 - just 2 courses:
 - Introduction to Machine Learning (Bára Hladká, Martin Holub)
 - Introduction to Computer Linguistics (Vlád'a Kuboň)
- Programming and Software systems (only in Czech)
- Software and Data Engineering (only in Czech)

Computational Linguistics / NLP at Bachelor level at MFF

new accreditation (from 2019/20)

- only one BSc programme in Computer Science
- 6 specializations:
 - General Computer Science
 - Programming and Software Development
 - System Programming
 - Databases and Web
 - **Artificial Intelligence**
 - Computer Graphics, Games Development and Visual Computing
- 180 ECTS in total, 81 common ECTS to all specializations
- at least 40 ECTS and at most 81 ECTS for a specialization

Computational Linguistics / NLP at Bachelor level at MFF

- responsible teacher: Ondřej Čepek

Mathematics

- less maths in courses common to all specializations
- Mathematical Analysis (Calculus) I – move to 2nd semester
- Statistics and Probability – newly designed and taught by KAM
(? Robert Šámal)
- Combinatorics and Graph Theory I – newly designed

Programming and Computer Science

- NEW – „basic programming literacy“ (intro to everything)
(incl. SW engineering – subversion, Github, sharing extensive codes, ...)
- NEW – intro to algorithmization (intro to Programming, ADS)
- Python as first programming language
- later intro to C+, C#, C++, Java (based on specialization)

Computational Linguistics / NLP at Bachelor level at MFF

specialization: Artificial Intelligence

responsible teacher: Roman Barták

- Artificial Intelligence
- Robotics
- NLP

NLP courses:

- Intro to Computer Linguistics (Vláša Kuboň) ... 2/0 (Y3 W)
- Intro to Machine Learning (Bára Hladká, Martin Holub) ... 2/2 (Y3 W)
- Text Processing in UNIX (Zdeněk Žabokrtský, Ruda Rosa) ... 0/2 (Y3 W)
- **NEW – Natural Language Processing** (Zdeněk Žabokrtský and others) ... 2/1 (Y3 S) ... „flag ship“
- Competing in Machine Translation (Ondřej Bojar) ... 0/2 (winter)
- **NEW – Dialogue Systems** (Ondřej Dušek, Honza Cuřín) ... 2/2 Z (year 3 summer)

Computer Science at Master level at MFF

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current situation

- **study programme Computer Science**
- responsible teacher: Tomáš Bureš (KDSS)
- 7 study branches:
 - Discrete Models and Algorithms
 - Theoretical Computer Science
 - Software and Data Engineering
 - Software Systems
 - **Computational Linguistics / Matematická lingvistika**
 - Artificial Intelligence
 - Computer Graphics and Game Development
 - (plus teachers preparation)

Computational Linguistics at Master level at MFF

NEW accreditation ... from 2020/21

- Computer Science ... 7 different study programmes
 - Theoretical Computer Science (IU UK)
 - Discrete Models and Algorithms (KAM)
 - Software and Data Engineering (KSI)
 - Software Systems (KDDS)
 - Artificial Intelligence (KTIML)
 - **Language Technologies and Computational Linguistics (UFAL)**
 - Visual Computing and Game Development (KSVI)
- (plus teachers preparation)
- 120 credits
 - 26 obligatory courses, at least 40 for elective courses
 - 30 diploma thesis

Computational Linguistics at Master level at MFF

Language Technologies and Computational Linguistics

•obligatory courses:

- Data Structures I (Koucký)
- Fundamentals of Complexity and Computability (Čepek)
- Introduction to General Linguistics (Hana)
- Statistical Methods in NLP I (Hajič, Pecina)
- Deep Learning (Straka)

} ALL CS programmes

• updated list of core elective courses (“UFAL-based”)

- at least 40 credits
- 3 types of projects
 - software project, research project, internship (firemní projekt)
- selected courses from the AI programme

Computational Linguistics at Master level at MFF

Language Technologies and Computational Linguistics

2 specializations:

- Computational and formal linguistics
- Statistical methods and machine learning in computational linguistics

state exams:

~~• Data Structures I~~

~~• Fundamentals of Complexity and Computability~~

1. Fundamentals of natural language processing (obligatory)
2. Linguistic theories and formalisms (specializing)
3. Statistical methods and machine learning in computational linguistics (specializing)
4. Multimodal technologies and data (elective)
5. Applications in natural language processing (elective)

Language & Communication Technologies (LCT)

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European Masters Program

ERASMUS MUNDUS double degree

- funded by EU: 2007/8-11/12, 2013/14-17/18, 2020/21-2024/25 !!!
- local coordination: Vláďa Kuboň, Markéta Lopatková

Partner universities

- University in Saarbrücken, Germany (coordinator)
- University of Trento, Italy
- University of Malta, Malta
- University of Lorraine (formerly Nancy 2), France
- University of Groningen, The Netherlands
- The University of the Basque Country, Spain

Language & Communication Technologies (LCT)

LCT at MFF UK:

- based on our local Master programme, study branch Computational Linguistics (programme Computer Science)
- for 2018/19 ... 1 student finished in June
6 students passed state exams last week
- for 2019/20 ... 2 students as first year students
(plus two students in our local programme thanks to LCT)

statistics (2007/08-2018/19):

- enrolled in Prague 48
 - graduated 42 (+ 3 pending)
 - failed 3
 - year 2 2 (+ 4 at partner universities)
- plus 5 non-LCT master students

Language & Communication Technologies (LCT)

positives:

- internationalization of our local master programme
- we have learned how CL programmes at partner universities are built
- source of students – promotion of our local programme

negatives:

- very difficult for students (2 MSc programmes in parallel)
- problems with coordination with partner universities
(local programmes do not fit together well, different level of requirements, ...)
- expensive – not sustainable without EU funding
- we are pushed to ask for a special accreditation this year 😞