

## Incoming student mobility

Name of UNIOS University Unit: DEPARTMENT OF MATHEMATICS

### COURSES OFFERED IN FOREIGN LANGUAGE FOR ERASMUS+ INDIVIDUAL INCOMING STUDENTS

Department or Chair within the UNIOS Unit	Department of Mathematics
Study program	<ul style="list-style-type: none"> <li>Undergraduate university study programme in Mathematics and Computer Science</li> <li>Graduate Mathematics and Informatics Education Study Programme</li> </ul>
Study level	Undergraduate (Bachelor)
Course title	Computational Linguistics
Course code	I051
Language of instruction	English
Brief course description	<p>Syllabus</p> <ol style="list-style-type: none"> <li>1. Word, forms and types of words, phrases, sentences. Grammar. Morphology, syntax, semantics.</li> <li>2. Introduction to computational linguistics. Natural and artificial language grammar. Language as a subset of free monoids (Kleen closure).</li> <li>3. Categorial or C-grammar. Generative or PS grammar (phrase structure grammar)</li> <li>4. Grammatical derivatives; LA (left-associate) grammar.</li> <li>5. Morpho-syntactic tagging (lemma tagging, syntactic SPO tagging, PoS – part of speech tagging, category, annotation). Algorithms in morphology, XML and visual syntactic tagging.</li> <li>6. Semantic tagging classes (role &amp; sense tagging). Semantic trees. Parsers.</li> <li>7. Regular expressions. Information retrieval from sentence. Supervised and non-supervised machine learning.</li> <li>8. Data mining. Classification and clustering of documents, probabilistic models.</li> <li>9. Term frequency–inverse document frequency (tf-idf) approach, latent semantic analysis (LSA).</li> <li>10. Network ontologies and linked data, SparQL queries, triple store storage (s-p-o: subject-object-predicate) triples of information.</li> </ol>

## ERASMUS+

EU programme for education, training, youth and sport

Form of teaching	Consultative teaching.
Form of assessment	Lectures will be conducted by demonstrating programming examples in Python+NLTK (natural language toolkit) with the help of several Python modules designed for Croatian language (corpus, morphology, semantics). In the practical part of the lectures (exercises) students will become acquainted with Web2Py <a href="http://www.web2py.com">http://www.web2py.com</a> MVC (model-view-controller framework) with the purpose of having all students' homework automatically embedded in the web environment. Lectures and exercises are obligatory. The final exam consists of a successfully done programming project and it is held after the completion of all lectures and exercises and successful participation in homework assignments and mid-term exams. In the projects, students will use a part of programming modules from known NLT repositories: <a href="http://www.nltk.org/">http://www.nltk.org/</a> , <a href="http://www.clips.ua.ac.be/">http://www.clips.ua.ac.be/</a> and <a href="http://scikit-learn.org/stable/">http://scikit-learn.org/stable/</a> .
Number of ECTS	6
Class hours per week	2+2+0
Minimum number of students	
Period of realization	Summer semester
Lecturer	Domagoj Ševerdija