



## COURSE PRESENTATION FORM

<b>COURSE NAME</b>	Formal Languages
<b>COURSE CODE</b>	
<b>LECTURER</b>	Diego Calvanese
<b>TEACHING ASSISTANT</b>	Kurt Ranalter
<b>TEACHING LANGUAGE</b>	English
<b>CREDIT POINTS</b>	4
<b>LECTURE HOURS</b>	24
<b>EXERCISE HOURS</b>	12
<b>PREREQUISITES</b>	There are no prerequisites in terms of courses to attend. Students should be familiar with notions of mathematics and set theory, and with basic proof techniques, as taught in the mathematics courses of the first year.
<b>OBJECTIVES</b>	The objective of the Formal Languages course is to introduce and study the basic abstract models of computation, namely finite state machines, push down machines, and formal grammars, and their relationships to formal languages encoding problems. It is also discussed how the abstract computing devices are used to process languages, and hence to solve problems that are of practical relevance. A second objective is to get the student acquainted to a formal, rigorous approach in computer science.
<b>SYLLABUS</b>	Theory of regular languages, finite automata, regular expressions, regular grammars, theory of context-free languages, context-free grammars, pushdown automata, formal grammars.
<b>TEACHING FORMAT</b>	Frontal lectures; exercises in class
<b>ASSESSMENT</b>	Written or oral final examination (100% of mark)
<b>READING LIST</b>	Textbook: <ul style="list-style-type: none"><li>• <i>Introduction to Automata Theory, Languages, and Computation</i> (3<sup>rd</sup> edition). J.E. Hopcroft, R. Motwani, J.D. Ullman. Addison Wesley, 2007.</li></ul> Further reading material for students interested in alternative viewpoints on the course material: <ul style="list-style-type: none"><li>• <i>Elements of the Theory of Computation</i> (2<sup>nd</sup> edition). H.R Lewis, C.H. Papadimitriou. Prentice Hall. 1998.</li><li>• <i>Introduction to the Theory of Computation</i>. M. Sipser. PWS Publishing Company. 1997.</li></ul>
<b>SOFTWARE USED</b>	None
<b>LEARNING OUTCOME</b>	Upon successful completion of the course, students will understand the general concepts of formal languages and grammars (specifically regular and context-free languages), and techniques used to process them. This background is a prerequisite to other courses, such as Compilers.