COURSE PRESENTATION FORM

COURSE NAME	Formal Languages
COURSE CODE	70100
LECTURER	Diego Calvanese
TEACHING ASSISTANT	To be determined
TEACHING LANGUAGE	English
CREDIT POINTS	4
LECTURE HOURS	24
EXERCISE HOURS	12
TIMESPAN	28/9/2009 – 23/1/2010
TIMETABLE	See http://www.unibz.it/en/inf/progs/bacs/timetable/
OFFICE HOURS LECTURER	See http://www.inf.unibz.it/~calvanese/teaching/
OFFICE HOURS TEACHING ASSISTANT	Time to be determined Via Sernesi 1, office C 5.01
PREREQUISITES	There are no prerequisites in terms of courses to attend. Students should be familiar with notions of mathematics and set theory, as taught in the mathematics courses of the first year.
OBJECTIVES	The main objective of the Formal Languages course is to introduce the fundamental notions about formal languages and the mechanisms for representing them. The course will focus on the formal languages that find most applications in computer science, namely regular and context-free languages. Students should become familiar with the fundamental representation mechanism for such languages, which span machine-based models (finite state machines for regular languages), algebraic models (regular expressions), and generation-based models (formal grammars). The aim is to exploit such representation mechanisms to study the properties of the different types of formal languages and the main algorithms for processing languages, which help to solve problems that are of practical relevance. A second objective of the course is to get students acquainted to a formal, rigorous approach in computer science.
SYLLABUS	Theory of regular languages, deterministic and non-deterministic finite automata, regular expressions, regular grammars, theory of context-free

languages, context-free grammars, formal grammars.

TEACHING FORMAT   Frontal lectures; exercises in class.

ASSESSMENT   Written or oral final examination (100% of mark).

READING LIST   Textbook:

Introduction to Automata Theory, Languages, and Computation (3rd edition). J.E. Hopcroft, R. Motwani, J.D. Ullman. Addison Wesley, 2007.

Further reading material for students interested in alternative viewpoints on the course material:

Elements of the Theory of Computation (2nd edition). H.R Lewis, C.H. Papadimitriou. Prentice Hall. 1998.
Introduction to the Theory of Computation. M. Sipser. PWS Publishing Company. 1997.

SOFTWARE USED   JFLAP http://www.jflap.org/

LEARNING OUTCOME   Upon successful completion of the course, students will understand the general concepts of formal languages (specifically regular and context-free languages) and formal grammars, and algorithms and techniques used to process them. These competences are a prerequisite to other courses, such as Compilers.

COURSE PAGE   http://www.inf.unibz.it/~calvanese/teaching/fl/