COURSE PRESENTATION FORM

COURSE NAME      Theory of Computing
COURSE CODE      70101
LECTURER         Diego Calvanese
TEACHING ASSISTANT    Kurt Ranalter
TEACHING LANGUAGE   English
CREDIT POINTS     8
LECTURE HOURS     48
EXERCISE HOURS    24
OFFICE HOURS      Friday, 15:00 – 17:00
                  Palais Trapp, Via della Mostra 4, office 2.08
OFFICE HOURS      Time to be determined
                  Via Sernesi 1, Block C, office 5.16
PREREQUISITES    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 a bachelor in computer
                  science.
OBJECTIVES       The objective of the Theory of Computing course is to introduce and study
                  abstract, mathematical models of computation (such as Turing machines,
                  formal grammars, recursive functions), and to use the abstract computation
                  models to study the ability to solve computational problems, by identifying
                  both the intrinsic limitations of computing devices, and the practical
                  limitations due to limited availability of resources (time and space). A second
                  objective is to show how to reason and prove properties about computations
                  in a precise, formal, abstract way.
SYLLABUS          Formal languages, formal grammars, Turing Machines, recursive functions,
                  undecidability, computational complexity, NP-completeness, time and space
                  complexity classes.
TEACHING FORMAT     Frontal lectures; exercises in class.
ASSESSMENT       Midterm or final examination on the first half of the syllabus (50%) + final
                  examination on the second half of the syllabus (50%). The two parts of the
                  examination can be taken independently of each other within the three exam
                  sessions of an academic year. Each part of the examination may be either
                  written or oral.
READING LIST

Textbooks:

Further reading material:

SOFTWARE USED

None

LEARNING OUTCOME

After the course, students will know the fundamental models of computation, and the intrinsic and practical limitations of computing devices. They will also be familiar with formal techniques of computer science, and will be able to formally prove properties about computations.

COURSE PAGE

[http://www.inf.unibz.it/~calvanese/teaching/tc/](http://www.inf.unibz.it/~calvanese/teaching/tc/)