UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Logical Foundations of Computer Science

2122-2-F1801Q141

Aims

The course introduces students to intermediate construttive logics and modal logics with their provers and to logical program synthesis

Contents

The lectures will focus on non-classical logics (intuitionism and modal logics) and their proof theory in a tableaux-style suitable for automated theorem proving (ATP).Systems for ATP will be presented.

Detailed program

Round-up of the main results of course Logic&Computation

Logical synthesis of algorithms

Introduction to intuitionistic logic; tableaux calculi and Kripke semantics

Validity and completeness theorems.

Introduction to modal logic S4; tableaux calculi and Kripke semantics.

Validity and completeness theorems.

Relationships between intuitionism and S4

Logics extending intuitionism and S4.

Theorem provers PITP, PITPINV, IPTP and Isabelle.

Prerequisites

Classical logic

Teaching form

Lessons will be in streaming or in classroom as Covid evolution will require. The language is italian

Textbook and teaching resource

M. Fittng, Intuitionistic logic, model theory and forcing, North Holland 1965

M. J. Cresswell, G. E. Hughes A New Introduction to Modal Logic, Taylor & Francis Ltd, 1996

G. Boolos, ,The Unprovability of Consistency: An Essay in Modal Logic, CUP, 1969

Slides in course site

Semester

second

Assessment method

Written exam with two intermediate written exams with exercises and open questions. The value of each intermediate written exam in 50% of the hole exam

Oral exam on the written exams

or

One written exam on the hole course program with exercises and open questions.

Oral exam on the written exam

Written and oral exams could be in streaming as Covid situation will require

Office hours

on demand