

Teaching Dossier

Here is a list of the courses mentioned in my teaching statement, with further details.

Semantics and Verification (Winter 2021, 2022, and 2023)

Syllabus. The goal of this course is to study several different types of models of computation and properties of their behaviors that can be automatically checked. It touches on labelled transition systems, linear time properties, order theory, topology, linear time logic, bisimulation, and modal logic.

Role. Teaching assistant. My duties were to compile exercise sheets with solutions, monitor tutorial sessions, and communicate on the attainment of course objectives with the instructor.

Additional information. Total of 62 hours in class with groups of around 15 master's students in computer science. The course instructor was Colin Riba.

Related McGill Offering. COMP525

Proofs and Programs (Winter 2023)

Syllabus. The goal of this course is to cover some basic and some advanced results revolving around the correspondence between proofs and programs (Curry-Howard). It touches on simply-typed lambda calculus, classical and intuitionistic natural deduction, system T, system F, strong normalization proofs, and parametricity.

Role. Teaching assistant. My duties were to compile exercise sheets with solutions, monitor tutorial sessions, and communicate on the attainment of course objectives with the instructor.

Additional information. Total of 20 hours in class with groups of around 15 master's students in computer science. The instructor was Michele Pagani.

Related McGill Offering. COMP527

Proofs and Programs (Winter 2022)

Syllabus. The goal of this course is to cover some basic and some advanced results revolving around the correspondence between proofs and programs (Curry-Howard). It touches on the Coq proof assistant, simply-typed lambda calculus, classical and intuitionistic natural deduction, system T, cartesian closed categories, and the Curry-Howard-Lambek correspondence.

Role. Teaching assistant. My duties were to compile exercise sheets with solutions, monitor tutorial sessions, and communicate on the attainment of course objectives with the instructor.

Additional information. Total of 20 hours in class with groups of around 15 master's students in computer science. The instructor was Colin Riba.

Related McGill Offering. COMP527

Category Theory (Summer 2019 and 2020, and Fall 2020, 2021, and 2023)

Syllabus. The goal of this course is to introduce basic category theory with examples coming from different places in mathematics and computer science. It touches on categories, functors, (co)limits, universal properties, natural transformations, the Yoneda lemma, adjunctions, and monads.

Role. Instructor. My duties were to design the course syllabus and the lectures, typeset lecture notes, present lectures, compile homework sheets, grade homeworks, and guide my peers to prepare lectures.

Additional information. Total of around 40 hours in class with groups of around 20 undergraduate and master's students in mathematics or computer science.

Related McGill Offerings. MATH570, MATH571, COMP598 in Winter 2015, and MATH724B in Winter 2003.

Theory of Computation (Fall 2018)

Syllabus. The goal of this course is to cover some basic models of computation, and study and compare their expressiveness. It touches on (non)deterministic automata, regular expressions, context-free grammars, Turing machines, decidability, and reductions.

Role. Teaching assistant. My duties were to hold office hours to help students in one-on-one discussions, and grade homeworks and midterms.

Additional information. The instructor was Prakash Panangaden.

Related McGill Offering. COMP330