

CS-642

Interactive Theorem Proving Project

Pit-Claudel Clément

Cursus	Sem.	Type
Computer and Communication Sciences		Opt.

Language of teaching	English
Credits	4
Session	
Exam	Multiple
Workload	120h
Hours	112
Courses	2
TP	40
Project	70
Number of positions	

Frequency

Every year

Remark

Doctoral-level alternative to CS-428 Interactive Theorem Proving

Summary

A project-focused introduction to interactive theorem proving.

Content

- Intro to the Rocq proof assistant (logic, higher-order functions, tactics)
- Functional programming (inductive types and fixpoints)
- Structural induction (data structures and verified algorithms)
- Interpreter-based program semantics (intro to compiler verification)
- Inductive relations (predicates, rule induction)

Note

Assessments:

Take-home assignments: 40% of final grade Formal verification project: 60% of the final grade

By the end of the course, the student must be able to:

Plan and carry out mechanized proofs in Rocq

Learning Prerequisites**Recommended courses**

CS320, CS550

Resources**Moodle Link**

- <https://go.epfl.ch/CS-642>