

IF105 : Logic and proof

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I6-A Algorithms and mathematics 2

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ECTS credits :

2.00

Evaluation :

S1: ET(2h,E,fa,sc) x1; S2: ET(2h,E,fa,sc) x1

Number of hours :

Lecture :	9.33
Tutorial classes :	14.00
Individual work :	15.00

Teacher(s) :

HERBRETEAU Frédéric

Title :

Logic and proof

Abstract :

The goal is to acquire theoretical tools in order to build formal reasonings, and to prove the termination and the correction of algorithms.

Plan :

1st part : Logic

- formalization in first-order logic
- introduction to proof theory
- induction, proof by induction

2nd part : proofs of algorithms

- specification through pre and post conditions
- while-programs, semantics
- proof of correctness, Hoare's logic
- termination proof: well-founded sets

Prerequisite :

None

Document(s) :

None

Keyword(s) :

Logic, induction, algorithms, correctness, termination

Online course :

<http://www.enseirb-matmeca.fr/~herbrete/IF105>