

UE Fundamental Computer Science



Level
Baccalaureate
+4



ECTS
3 credits



Component
UFR IM2AG
(informatique,
mathématiques
et
mathématiques
appliquées)



Semester
Printemps

- > **Teaching language(s):** English
- > **Open to exchange students:** Yes
- > **Code d'export Apogée:** GBX8MO13

Presentation

Description

This module introduces the fundamental aspects of computer science and particularly focuses on the notions of computability and complexity. Regarding computability theory, it presents the basic formal model to reason on the notion of computation, i.e., the Turing machine and its variants. Based on this computational model, the notions of decidable and semi-decidable languages will be defined, while the existence of languages which are undecidable will be shown. Regarding complexity theory, it presents the main classes of time complexity such as P, NP, as well as the notion of NP-completeness. Several problems in the domains of propositional logic, graphs and scheduling are studied with respect to their time complexity by proposing either polynomial-time algorithms to solve them efficiently or polynomial-time reductions to prove their hardness.

Course parts

Lectures	Lectures (CM)	16,5h
Tutorials	Tutorials (TD)	16,5h

Period : Semester 8

Useful info

Contacts

Program director
Alastair Abbott

Campus

› [Grenoble - University campus](#)