



Faculty of Applied Sciences

INGI1122 Program conception methods

[30h+30h exercises] 5 credits

This course is taught in the 2nd semester

Teacher(s): Baudouin Le Charlier
Language: French
Level: First cycle

Aims

- To imagine and realize a correct and efficient algorithm to solve a given problem
- To understand, choice and apply various methods to design programs in order to realize and demonstrate the exactness of complex algorithms

Main themes

- Methods to design and prove programs : invariant methods, wp calculus, induction on structures.
- Program transformations and techniques used to improve the efficiency
- Program schemes and problem classes: global research schemes (backward path, selection and evaluation, binary research), local research schemes (voracious strategy; gradient research, simulated annealing), structural reduction schemes (split to reign, dynamic programming, relaxation, constraints).

Content and teaching methods

see "Main themes"

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

- Prerequisite

(1) SINF1150 (Easier if SINF1121 is followed concurrently).

- Reference

(1) Liskov, B., "Program Development in Java: Abstraction, Specification, and Object-Oriented Design." , Addison-Wesley, 2001.

(2) Goodrich M.T. & Tamassia R, "Data Structure and Algorithms in Java." , Second Edition, John Wiley & Sons, 1997.

- Organization

Active learning through problem solving in small groups

Other credits in programs

FSA13BA	Troisième année de bachelier en sciences de l'ingénieur, orientation ingénieur civil	(5 credits)	
MAP22	Deuxième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(5 credits)	
SINF13BA	Troisième année d'études de bachelier en sciences informatiques	(5 credits)	Mandatory
SINF1PM	Année d'études préparatoires au master en sciences informatiques (60 et 120)	(5 credits)	Mandatory