

Faculty of Applied Sciences



INGI2122 Program conception methods

[30h+30h exercises] 5 credits

This course is taught in the 1st semester

Teacher(s): Yves Deville, Baudouin Le Charlier (coord.)
Language: French
Level: Second 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) LINF2121 Algorithmique et structures de données P. Dupont

- 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

Programmes in which this activity is taught

ECGE3DS/IG Diplôme d'études spécialisées en économie et gestion
(informatique de gestion - Master in Information Systems)
INFO2 Ingénieur civil informaticien
LINF2 Licence en informatique

Other credits in programs

ECGE3DS/IG	Diplôme d'études spécialisées en économie et gestion (informatique de gestion - Master in Information Systems)	(3 credits)	
INFO21	Première année du programme conduisant au grade d'ingénieur civil informaticien	(5 credits)	Mandatory
LINF21	Première licence en informatique	(5 credits)	
LINF21/GN	Première licence en informatique (informatique générale)	(5 credits)	Mandatory
LINF21/GS	Première licence en informatique (informatique de gestion)	(5 credits)	Mandatory