

## Faculty of Applied Sciences



### INGI1122 Program conception methods

[30h+30h exercises] 5 credits

This course is not taught in 2005-2006

This course is taught in the 2nd semester

Language: French

Level: First cycle

#### Aims

- To imagine and realize a correct and efficient algorithm to solve a given problem
- To understand, choose 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

#### Other credits in programs

<b>SINF12BA</b>	Deuxième année d'études de bachelier en sciences informatiques	(5 credits)
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