



# Faculté des sciences appliquées

## FSA

INGI2368 Computational biology

[30h+15h exercices] 4 credits

This course is taught in the 1st semester

**Teacher(s):** Yves Deville, Pierre Dupont (coord.)  
**Language:** french  
**Level:** 2nd cycle course

### Aims

- To understand the basics in biology to design, to develop and to use computational biology tools
- To justify the use of a particular computer technique to solve a computational biology problem
- To design, develop and use specific computational biology software tools

### Main themes

Computational biology, or bioinformatics, deals with the development and application of theoretical models and practical data processing tools for the study of biological systems. This interdisciplinary field includes contributions from molecular biology, biochemistry, computer science, mathematics and statistics. From a computer science viewpoint, it involves the design of specific data structures and efficient algorithms, the use of optimized database systems, simulation techniques, computer graphics and web interfaces.

### Content and teaching methods

- Sequence alignment techniques
  - Database search
  - Motif search
  - Phylogenetic Tree Construction
  - Hidden Markov Models
  - Structure prediction
  - DNA microarrays
  - Biochemical network analysis
- Teaching method: lectures and student seminars

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

- Prerequisite :
  - (1) LINF2121 Data Structures and Algorithms
  - (2) INGI2261 Artificial Intelligence: representation and reasoning
- Remarque:
- Course Website : [http://www.info.ucl.ac.be/notes\\_de\\_cours/INGI2368/](http://www.info.ucl.ac.be/notes_de_cours/INGI2368/)

### Other credits in programs

<b>INFO22</b>	Deuxième année du programme conduisant au grade d'ingénieur civil informaticien	(4 credits)
<b>INFO23</b>	Troisième année du programme conduisant au grade d'ingénieur civil informaticien	(4 credits)