

### INGI2113 Structure and use to computer systems

[30h+30h exercises] 5 credits

This course is taught in the 1st semester

Teacher(s):Olivier Bonaventure, Marc Lobelle (coord.), Peter Van RoyLanguage:FrenchLevel:Second cycle

#### Aims

- To understand and explain the functionalities provided by the different hierarchical levels of the architecture of a computing system, from the physical machine to software components directly supporting the applications

- To understand and explain typical system architectures their components, as well at the hardware as the operating system level

- To use and configure efficiently functions and services provided by computers and operating systems
- To compare various computer implementations and identify their strengthes and weaknesses
- To know and understand the implications of the orders of magnitude of measurable characteristics of computing systems

#### Main themes

- Abstraction levels in computing systems
- Architectures of processors
- Memory hierarchy Peripherals and peripheral interfaces
- Techniques for performance enhancement
- Machine language, assembly language and C language
- Mission and functions of operating systems
- Key concepts in operating systems
- Use of operating system functions in C programs
- C programming on computer without OS.

#### **Content and teaching methods**

see "Main themes"

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

- Prerequisite:

- (1) Mastering a high level language such as Java, C or C++.
- (2) Passive technical english
- References

Mandatory Book:

(1) Tanenbaum, A. S., "Modern Operating Systems (second edition)", Prentice Hall Inc, 2001

Recommended reading

(2) Patterson, D. A. and Hennessy, J.L., "Computer Organization and Design: the Hardware / Software Interface", Morgan Kaufman Publ. Inc, 1998

- (3) Stevens, R. W, "Advanced Programming in the Unix Environment", Addison-Wesley Inc, 1992.
- Organisation
- \* Individual and group based active learning
- \* Course language: French ; the course can be taken by English speaking students

## Programmes in which this activity is taught

FSA3DS	Diplôme d'études spécialisées en sciences appliquées
INFO2	Ingénieur civil informaticien

## Other credits in programs

FSA3DS/IN	Diplôme d'études spécialisées en sciences appliquées (informatique)	(5 credits)	
FSA3DS/TL	Diplôme d'études spécialisées en sciences appliquées (télécommunications)	(5 credits)	
INFO21	Première année du programme conduisant au grade d'ingénieur (5 credits) civil informaticien		Mandatory