



# Faculté des sciences appliquées

## FSA

### ELEC2525 INTRODUCTION TO DIGITAL ELECTRONICS

[30h+30h exercices] 5 credits

This course is taught in the 1st semester

**Teacher(s):** Jean-Didier Legat, Michel Verleysen (supplée Jean-Didier Legat)  
**Language:** french  
**Level:** 2nd cycle course

#### Aims

At the end of the course, the students will have the necessary background to follow an advanced lecture in digital electronics.

In particular they will be able to :

- calculate DC, transient, periodic and frequency responses of circuits with resistors, capacitors and inductors,
- understand and describe the behavior of basic electronic components (diodes, MOS and bipolar circuits),
- use their knowledge of transistor responses to understand basic electronic circuits and compute their DC and transient responses
- design simple electronic circuits based on operational amplifiers,
- understand the principles of analog-to-digital and digital-to-analog converters,
- make electrical measures with standard measurement devices like oscilloscopes and multimeters

#### Content and teaching methods

- reminder on circuit theory : resistive, RL, RC and RLC circuits; dependent sources; DC and transient responses
- periodic and transient responses
- semiconductors : N and P doping
- diodes
- MOS transistors : DC and small-circuit responses, frequency response
- bipolar transistors : modes of operation, large and small-signals transfer functions
- operational amplifiers; feedback
- analog-to-digital and digital-to-analog converters

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

Group exercises and laboratories

Reference :

Electrical Engineering - Principles and Applications 2nd Edition - Allan R. Hambley - 2002-0-13061070-4

For more information :

<http://www.dice.ucl.ac.be/~jdl/InfoCours/InfoCours.htm>

Assessment :

Written exam during the sessions.

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#### Other credits in programs

<b>ELEC22</b>	Deuxième année du programme conduisant au grade d'ingénieur civil électricien	(5 credits)	
<b>INFO21</b>	Première année du programme conduisant au grade d'ingénieur civil informaticien	(5 credits)	Mandatory
<b>INFO22</b>	Deuxième année du programme conduisant au grade d'ingénieur civil informaticien	(5 credits)	Mandatory