

Liste d'éléments pédagogiques

Practical info

Location(s)

 Toulouse

Analysis and signal

 ECTS
5 crédits

 Hourly volume
58h

Practical info

Location(s)

 Toulouse

Probabilities and statistics



ECTS
3 crédits



Hourly volume
26h

Introducing

Objectives

Objectives:

At the end of this module, the student will have understood and be able to explain (main concepts):

- what a probability space is
- the notion of conditional probability and independence between events
- what a random variable (discrete or continuous) and its characteristics are
- how to apply limit theorems such as the Law of Large Numbers (LLN) or the Central Limit Theorem (CLT)
- the notion of statistical estimation

The student will be able to:

- to compute probabilities by Bayes formula
- to determine the law of a given random variable, to compute its expectation, variance, characteristic function, etc.
- to prove independence between random variables (when they are independent)
- to approximate distributions by using underlying limit theorems
- to estimate by confidence intervals some unknown parameters (expectation, variance, proportion) associated to a large population

Necessary knowledge:

Lectures of mathematics of first year (I1ANMAAR, I1ANMATC, I1ANMAEF).

Lectures of mathematics of second year (I2MIMT11, I2MIMT21)

Practical info

Location(s)

Toulouse

Necessary prerequisites

Electromagnetism and waves

 **ECTS**
6 crédits

 **Hourly volume**
68h

Introducing

Objectives

- Develop a physical intuition of electromagnetic phenomena.
- Understand the link between visible light and the electromagnetic spectrum thanks to Maxwell's equations.
- Obtain a first level of mastery of electromagnetic induction phenomena.
- Whatever his specialty, be able to understand and exchange in a multidisciplinary team of engineer level working on a project with an electromagnetic component.

Practical info

Location(s)

 Toulouse

Python and Algorithm and programming II



ECTS
4 crédits



Hourly volume
54h

Introducing

Objectives

This course has a two objectives :

a/ to understand the concepts of exception, protection by encapsulation, packaging and genericity, in order to design robust and reusable programs;

b/ to know how to realize abstract data types (stacks, queues, lists, trees, heaps) with dynamic data structures (using pointers) and to design the associated algorithms (search/ insert/ delete/ update, filtering)

At the end of this course, the student should be able to design dynamic data structures and implement them through new Ada packages or by instantiation of generic packages. This course prepares students for O.O. (object-oriented) design and programming.

This course also provides an introduction to the Python language.

Practical info

Location(s)

 Toulouse

Necessary prerequisites

Basic level in algorithmics and imperative programming in Ada : control structures in sequential algorithms (if-then-else, loops for/while/repeat-until) top-down design, subprograms and parameter passing.

Control systems



ECTS
3 crédits



Hourly volume
39h

Introducing

Objectives

Objectives :

At the end of this module, the student will have understood and be able to explain (main concepts):

- (1) the modelling, the responses and the control of linear invariant systems;
- (2) the synthesis and the analysis of sequential logic systems.

The student will be able to:

- transform a linear differential equation into a transfer function (and vice-versa), plot the time and frequency responses of linear systems (dominant poles), recognize a first- or second-order system, determine the asymptotic stability (Routh criterion or root locus), state and use the Nyquist stability criterion, find the gain and phase margins, compute the settling time and the steady-state error, design a PID controller (Ziegler & Nichols method), compute a P controller for a given phase margin, state the principle of phase-lead and phase-lag controllers
- Analyze and synthesize complex sequential logic systems, analyze logic sequential systems, use Petri nets for specifying parallelism, synchronization, and shared resources, analyze the Petri nets properties (reachability, liveness, boundedness) with the marking graph, analyze the Harel statechart properties.

Necessary prerequisites

Necessary knowledge:

I2MIIM11 Logic Design and Computer Organisation

Practical info

Location(s)

 Toulouse

[FRANCAIS] Langue vivante 1 spécifique FAS



ECTS
3 crédits



Hourly volume
37h

Toulouse

Introducing

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

The student will be able to :

- ↳ research, organize and synthesize relevant information drawn from resources in English.
- ↳ structure an argument in a convincing way
- ↳ take part in a debate and interact with other participants
- ↳ write a report in English
- ↳ demonstrate good mastery of basic English grammar and TOEIC test expectations

Necessary prerequisites

Necessary knowledge:

- First-year LV1 and Expression skills (D1ANHU01)
- Second-year LV1 and Expression skills (I2FAGE31)

Practical info

Location(s)

Improving one's autonomy and building one's own professional project level 2B



ECTS
6 crédits



Hourly volume
292h

Introducing

Objectives

To be able :

- deepen self-knowledge (analyze my strengths and weaknesses),
- self-assessment,
- take into account the skills (strengths and weaknesses) of its partners,
- to adjust and regulate their behavior according to others.

Necessary prerequisites

1st year learning outcomes.

Practical info

Location(s)

 Toulouse