

2nd YEAR IMACS_SEMESTER 3 INSA

Practical info

Location(s)

 Toulouse

Nanophysics : wave propagation, photonics, nanotechnologies



ECTS
5 crédits



Hourly volume
58h

Introducing

Objectives

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

- The fundamentals of wave propagation and quantum physics that are necessary for the understanding of modern electronic devices and analytical techniques
- The principle of analytical techniques commonly used in laboratories and the molecular mechanisms of quantum physics

The student will be able to:

- Formulate in his own words some nano-scale mechanisms and give concrete examples of micro and nano-devices together with well-known analytical methods using these mechanisms
 - Master elementary phenomena of nano-scale physics
 - Select the best method for a specific characterisation on the basis of the acquired concepts.
 - Carry out some nano-scale characterisation methods
 - Link mathematical formalism of quantum physics to real applications
 - Grasp the necessary approximations that are required in quantum physics
 - Bring together these different concepts to assimilate them, extract them from their context in order to apply them to real situations
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Necessary prerequisites

1st year Mechanics, Electrostatics, Optics and Mathematics

Practical info

Location(s)

 Toulouse

Algebra and Analysis 1

 ECTS
6 crédits

 Hourly volume
66h

Practical info

Location(s)

 Toulouse

Concepts and circuits for Signal Processing

 ECTS
7 crédits

 Hourly volume
76h

Practical info

Location(s)

 Toulouse

Feedback systems and digital electronics



ECTS
5 crédits



Hourly volume
60h

Practical info

Location(s)

 Toulouse

Company knowledge and communication

 **ECTS**
5 crédits

 **Hourly volume**
75h

Introducing

Objectives

Objectives:

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

- how to give an oral presentation
- some of the historical, geographical and/or geopolitical aspects of different English-speaking socio-cultural contexts
- how to produce a structured written synthesis in French.
- how to write a training period report and present it orally
- inner workings of contemporary economy and interdependence of macroeconomic scales

The student will be able to:

In French

- write the synthesis of a set of press articles and present it orally with Powerpoint visual aids
- write a training period report and give an oral presentation describing a particular company, reporting on and analysing a work experience.

In English:

- give a Powerpoint oral presentation in front of a group and orally interact with the audience
- demonstrate creativity, initiative and open mindedness in teamwork

- develop a thorough knowledge and a critical mind about different English-speaking socio-cultural contexts, taking into account historical, geographical and/or geopolitical considerations.

In Economics :

- understand current major economic and societal stakes
- discuss and debate using arguments grounded in the knowledge of fundamental economic mechanisms and some economic thinking theories

Necessary prerequisites

Expression 1 in the first-year « Grand Domaine Humanités » (D1ANHU01)

Writing and oral skills in English in the first-year « Grand Domaine Humanités » (D1ANHU01)

Practical info

Location(s)

 Toulouse

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



ECTS
2 crédits



Hourly volume
44h

Practical info

Location(s)

 Toulouse

Refresher course 2nd year



ECTS



Hourly volume
162h

Practical info

Location(s)

 Toulouse