

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

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