

# Nanophysics : wave propagation, photonics, nanotechnologies



ECTS  
5 crédits



Hourly volume  
58h

## Introducing

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### 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

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### Location(s)

 Toulouse