UCL Faculté des sciences

SC

PHYS2121 Physique théorique et mathématique I

[22.5h+15h exercises] 3.5 credits

This course is taught in the 1st semester

Teacher(s): Jean-Pierre Antoine, Jean Bricmont, Philippe Ruelle
Language: french
Level: 2nd cycle course

Aims

The course is centered on the study of the essential tool of quantum mechanics, the Hilbert space. The abstract notions are brought progressively, starting from concrete cases ("special" functions; Fourier series) and are illustrated by applications taken from theoretical physics (in particular quantum mechanics).

Main themes

- Fourier series
- Special functions: orthogonal polynomials (Legendre, Laguerre, Hermite), Bessel functions
- Hilbert space
- Operators in Hilbert space, spectral theory, special types of operators
- Introduction to the theory of distributions

Other credits in programs

MATH21/G	Première licence en sciences mathématiques (Général)	(4 credits)	
MATR23	Troisième année du programme conduisant au grade d'ingénieur civil en science des matériaux	(3.5 credits)	
PHYS21/A	Première licence en sciences physiques (Physique appliquée)	(3.5 credits)	Mandatory
PHYS21/G	Première licence en sciences physiques	(3.5 credits)	Mandatory
PHYS21/T	Première licence en sciences physiques (Physique de la terre, de l'espace et du climat)	(3.5 credits)	Mandatory