UCL Université catholique de Louvain

LPHY2237

2013-2014

Cosmology II

5.0 credits	22.5 h + 7.5 h	1q

Teacher(s) :	Ringeval Christophe ;
Language :	Français
Place of the course	Louvain-la-Neuve
Prerequisites :	Bachelor + Master 1 with General Relativity (PHY1323) Cosmology I (PHY2126) Fundamental Interactions (PHY2121) Optional : Electroweak Interaction (PHY2224)
Main themes :	Inhomogeneous universe, theory of cosmological perturbations, cosmic microwave background anisotropies, the early universe. -The inhomegeneous universe * CMB anisotropies and large scale structures * Horizon and flatness problem, the origin of inhomogeneities - Theory of cosmological perturbations * Gauge invariance, decomposition Scalar-Vector-Tensor * Perturbed metric and Einstein equations * Density fluctuations, evolution and power spectrum - Cosmic microwave background anisotropies * Photon propagation * Perturbed Boltzmann equation * Angular power spectrum * Initial conditions and cosmological parameter estimation
Aims :	This course introduces the concepts required to understand modern Cosmology. It addresses the evolution of cosmological perturbations from the radiation era to the formation of galaxies, while discussing their imprints in the cosmic microwave background. *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Evaluation methods :	Written exam
Teaching methods :	Lectures on blackboard
Content :	-The inhomegeneous universe * CMB anisotropies and large scale structures * Horizon and flatness problem, the origin of inhomogeneities - Theory of cosmological perturbations * Gauge invariance, decomposition Scalar- Vector-Tensor * Perturbed metric and Einstein equations * Density fluctuations, evolution and power spectrum - Cosmic microwave background anisotropies * Photon propagation * Perturbed Boltzmann equation * Angular power spectrum * Initial conditions and cosmological parameter estimation
Cycle and year of study :	> Master [120] in Physics
Faculty or entity in charge:	PHYS