Imperial College London

Module Outline

Cosmology

Module Code	PHYS97015	FHEQ Level	Level 7
Pre-requisites	Physics of the Universe, Astrophysics	Co-requisites	None
Primary Department	Physics		
Module Leader	Dr Subhanjoy Mohanty		
Additional Teaching Departments	None		
Teaching Staff	Dr Subhanjoy Mohanty + Course Associate		

Programmes on which the Module is delivered	Core/Elective
All UG Physics programmes (F300, F303, F309, F325, F390, F3W3)	Elective

Learning Outcomes

On completing the Cosmology course, students will be able to:

- Detail the evidence supporting the hot big bang theory
- Appreciate the wide range of physics which finds simple applications in cosmology
- Make predictions from cosmological models which can be compared against observations
- Use modern observational data to constrain the cosmological parameters and understand the physical basis behind their determination
- Undertake further study on the topic at postgraduate level

Description of Content

You will learn the basics of modern cosmology, and in particular the foundations of the Hot Big Bang theory.
The course is primarily theoretical, though with some observational input, and focuses on the application of different aspects of physics on the grandest possible scale.
The course will include:

- Introduction & History
- Cosmological Models
- Newtonian theory
- General Relativity
- FRW cosmology
- Cosmography & Cosmological Parameters
- Thermodynamics & The Hot Big Bang
- Baryogenesis and the Sakharov Conditions
- Big-Bang Nucleosynthesis
- Cosmic Microwave Background
- Open questions in the Hot Big Bang
- Inflation
- Structure Formation
- Large-Scale structure
- Galaxy Formation
- Fluctuations in the CMB

Assessment		Assessment Type	Weighting
Written Exam		Exam	100%
Learning & Teaching Hours	Independent Study Hours	Placement Hours	Total Hours
57	93	0	150
ECTS Credit	6	CATS Credit	12
Date of introduction	October 2016	Date of Last Revision	22/04/2020