

Basic details

UID	<input type="text"/>	Cohorts covered	Earliest cohort 2024-25	Latest cohort <input type="text"/>
Long title	Cosmology			
New code	PHYS70014	New short title	<input type="text"/>	
Brief description of module <i>(approx. 600 chars.)</i>	To learn the basics of modern cosmology -- the study of the origins, evolution and fate of the universe -- and in particular the foundations of the Hot Big Bang theory. The module is primarily theoretical, though with some observational input, and focuses on the application of different aspects of physics on the grandest possible scale: the universe as a whole.			
	363 characters			
Available as a standalone module/ short course?	N			

Statutory details

Credit value	ECTS 7.5	CATS 15	Non-credit N	HECOS codes	<input type="text"/>
FHEQ level	Level 7				<input type="text"/>

Allocation of study hours

	Hours	
Lectures	26	
Group teaching	10	<i>Incl. seminars, tutorials, problem classes.</i>
Lab/ practical	0	
Other scheduled	20	<i>Incl. project supervision, fieldwork, external visits.</i>
Independent study	131.5	<i>Incl. wider reading/ practice, follow-up work, completion of assessments, revisions.</i>
Placement	0	<i>Incl. work-based learning and study that occurs overseas.</i>
Total hours	187.5	
ECTS ratio	25.00	

Project/placement activity

Is placement activity allowed?

Module delivery

Delivery mode	Taught/ Campus	Other	<input type="text"/>
Delivery term	<input type="text"/>	Other	Term 2, exam in term 3

Ownership

Primary department	Physics
Additional teaching departments	None
	<input type="text"/>

Delivery campus **South Kensington**

## Collaborative delivery

Collaborative delivery? **N**

External institution **N/A**  
External department **N/A**  
External campus **N/A**

## Associated staff

Role	CID	Given name	Surname
Module Leader		Jonathan	Pritchard

## Learning and teaching

### Module description

Learning outcomes	<p>By the end of the module, the student should be able to:</p> <ul style="list-style-type: none"><li>• Detail the evidence supporting the hot Big Bang theory</li><li>• Appreciate the wide range of physics which finds simple applications in cosmology</li><li>• Make predictions from cosmological models which can be compared against observations</li><li>• Use modern observational data to constrain the cosmological parameters and understand the physical basis behind their determination</li><li>• Undertake further study on the topic at postgraduate level</li></ul>
Module content	<ul style="list-style-type: none"><li>• Introduction and History</li><li>• Cosmological Models</li><li>• Newtonian theory</li><li>• General Relativity</li><li>• FRW cosmology</li><li>• Cosmography and Cosmological Parameters</li><li>• Thermodynamics and The Hot Big Bang</li><li>• Baryogenesis and the Sakharov Conditions</li><li>• Big-Bang Nucleosynthesis</li><li>• Cosmic Microwave Background</li><li>• Open questions in the Hot Big Bang</li><li>• Inflation</li><li>• Structure Formation</li><li>• Large-Scale structure</li><li>• Galaxy Formation</li><li>• Fluctuations in the Cosmic Microwave Background (CMB)</li></ul>
Learning and Teaching Approach	<p>Students will be taught over one term using a combination of lectures, office hours and problem sheets (non-assessed, but with solutions provided a week later as well as discussed in class; the problem sheets also include 1-2 rapid feedback questions each: see Feedback section below).</p>
Assessment Strategy	<p>100% summative assessment based on final exam: written exam of 2 hours. Questions equally cover material previously seen, partially seen and unseen (where the latter are still answerable using information and intuition learned in course).</p>

Feedback Problem sheets are provided approx. weekly (8-10 in total) with questions and examples students can practise with; while these assignments are not marked, comprehensive solutions to the problems are provided a week after they are assigned. On each problem sheet, one or two questions are also specified to be Rapid Feedback questions. Students can hand in their answers to these questions; their answers are then reviewed and annotated (without any no formal mark) by a teaching assistant for formative feedback. Rapid Feedback questions are then also reviewed during a Rapid Feedback session with the teaching assistant.

Reading list (1) An Introduction to Modern Cosmology (Liddle, A., 3rd Edition, Chichester, England: Wiley, 2015): in stock in library;  
(2) Extragalactic Astronomy and Cosmology: An Introduction (Schneider, P., 2nd Edition, Berlin: Springer, 2015): in stock in library;  
(3) Introduction to Cosmology (Ryden, B., 2nd Edition: Cambridge University Press, 2016): in stock in library

### Quality assurance

### Office use only

Date of first approval   
Date of last revision   
Date of this approval

QA Lead   
Department staff   
Date of collection

Module leader Jonathan Pritchard

Date exported   
Date imported

Notes/ comments

# Programme structure

## Associated modules

UID

Legacy code

Module title

Requisite type



