科目ナン	<b>バリング</b> U-	LAS12 200	017 LE57							
授業科目 <英訳>			••	担当 職名	者所属 ・氏名	基礎物理学研	开究所 冶	主教授	Antonio De Felice	(アントニオデフェリーチェ)
群	自然科学科目君	¥	分野(分類)	物理学(	発展)		使	用言語	英調	E E
旧群	B群 単位数	2単位	週コマ数	174	授	業形態	講義(	(対面授	業科	目)
開講年度・ 開講期	2025・前期	曜時限 オ	<2		配当学	年 主として1	1・2回生	対象学	生	全学向
[授業の概要・目的]										
The aim of this lecture is to introduce the basic concepts of modern cosmology. Our current understanding about the history of the universe is explained so that one can capture how observational data are interpreted with the aid of the law of physics in an elementary way. For this purpose, the development of the basic theories of physics necessary to describe modern cosmology will be reviewed in a less rigorous way. The lecture is supposed to be interactive.										
Students way. They will solve the The discu	[到達目標] Students will be able to understand how to approach the study of cosmology in a mathematical and physical way. They will be introduced to the problems of modern cosmology, and to the methods cosmologist use to try to solve them. The discussion will tend to link cosmology to other fields in physics, e.g. thermodynamics, (some notions of) particle physics.									
「授業計										
[授業計画と内容] I. Introduction and Historical backgrounds II. The Role of the Speed of Light in Special Relativity III. Newtonian Gravity and General Relativity IV. Homogeneous Universe Model based on General Relativity and Discovery of the Expanding Universe V. Tips of Thermodynamics VI. Nucleosynthesis in the Early Universe VII. Prediction and Discovery of Cosmic Microwave background VIII Shortcoming of the Big-Bang Cosmology IX. Inflationary universe X. Inevitable Quantum fluctuation XI. Structure Formation of the Universe XII. Inflation Again in the Present Universe? In total, at most 14 classes will be offered (one for each week of the semester) plus one feedback meeting with the structure										
I. Introdu II. The Ro III. Newt IV. Home V. Tips o VI. Nucle VII. Pred VIII Shor IX. Inflat X. Inevita XI. Struc XII. Infla	ction and Histori ole of the Speed onian Gravity an ogeneous Univer f Thermodynami eosynthesis in the iction and Discov rtcoming of the E ionary universe able Quantum flu ture Formation o tion Again in the	of Light in d General F se Model ba cs e Early Univ very of Cos Big-Bang Co actuation f the Unive e Present Ur	Special Relati Relativity ased on Gener werse mic Microwa osmology rse niverse?	ral Relativ	round			-		
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#### Introduction to Cosmology-E2(2)

#### [成績評価の方法・観点]

Evaluation method: 25%: mid term exam; 75%: final exam. No homework is given during the whole duration of the course.

## [教科書]

Antonio De Felice <sup>P</sup>Lecture notes (given in the class as a pdf file)

# [参考書等]

(参考書)

Michael Rowan-Robinson <sup>C</sup>Cosmology<sub>1</sub> (Clarendon Press, Oxford, 2011)

[授業外学修(予習・復習)等]

The students will be provided with the lecture notes of the course [as a pdf file in PandA and on kulasis]. They are supposed to study them, not only to review the work done in previous lectures but also to prepare for the upcoming ones.

## [その他(オフィスアワー等)]

Office hours: 2hrs per week to be decided with the students [usually taking place on Fridays at noon]. E-mail will be provided, so that the students can contact the teacher at any time.

[主要授業科目(学部・学科名)]