

Syllabus Reference

Course title	Introduction to Theoretical Astronomy		
Term	前期 1st Half		
Credit(s)	2		
The main day		The main period	
School/Program	School of Physical Sciences		
Department/Program	Common Subjects of Physical Sciences		
Category	Common Subjects of Physical Sciences		
Lecturers			

Instructor

Full name

* NOMURA HIDEKO

MACHIDA MAMI

Outline	This course provides an overview of the basic astronomical sciences from the standpoint of theoretical astronomy and astrophysics, including the structure and evolution of stars and galaxies, the origin of star and planetary systems, and other aspects of the astronomical hierarchy from the galaxies to the stars and planetary systems.
Goal	Learn the theoretical aspects of astronomy, regardless of your major fields of researches, such as theory, observation, and/or instrument development. Learn how to handle various hierarchies such as planetary systems, stars, and galaxies.
Grading system	
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Grading system	01:Four-grade evaluation (A, B, C, D)
Grading policy	Students who attend more than 60% of the lectures will receive a grade based on their performance in the reports assigned multiple times during the lectures.
Lecture Plan	<ol style="list-style-type: none"> 1. Astrophysical fluid dynamics and hydrostatic equilibrium 2. Stellar structure 3. Gravitational instability and star formation 4. Basics of accretion disks 5. Instabilities of rotating disks 6. Angular momentum transfer mechanisms in accretion disks 7. Dynamics of dust grains in gas disks 8. Galactic Stellar Dynamics 9. Relaxation of the N-body system 10. Astrophysical jet 11. Transonic-solution 12. Astrophysical shock 13. Magneto-hydrodynamics approximation and MHD waves 14. Shocks with the magnetic fields
Location	online
Language	Japanese/English When students who do not understand Japanese are included in the course.
Textbooks and references	Reference book "Fundamentals of Astrophysical Fluid Dynamics" Shoji Kato, Jun Fukue
Others	Students who are familiar with the contents of this lecture are kindly required to ask the lecturer about their attendance and evaluation. Students are asked to do homework such as solving problem sets.

