



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Elements of Astrophysics

2021-3-E3001Q054

Aims

The aim of the course is to provide an understanding of the problems related to modern astrophysics with particular reference to stellar and extragalactic astrophysics and cosmology. At the end of the course the student will be able to describe the properties of the most important astrophysical sources both from a theoretical and observational point of view.

Contents

Stellar astrophysics. Compact Objects. Accretion processes and high energy astrophysics. Compact object binaries and gravitational waves. Properties of galaxies and galaxy clusters. Cosmological model.

Detailed program

1. Introduction to basic concepts
2. Outline of stellar structure and evolution
3. Compact objects: white dwarfs, neutron stars and black holes
4. Accretion processes and high energy astrophysics
5. Gravitational waves from compact object binaries
6. Galaxies: morphology and dynamics
7. The cosmic distance ladder and the conceptual tools for its measurement
8. Hubble law and the cosmological model

Prerequisites

Physics 1 (including special relativity), Physics 2 (electromagnetic radiation), Physics 3 (black body radiation, wave-particle duality).

Teaching form

Textbook and teaching resource

Dan Maoz: Astrophysics in a nutshell. Ed. Princeton University Press.

Stephan Rosswog & Marcus Brüggen: Introduction to High-Energy Astrophysics. Ed. Cambridge University Press.

Semester

III year, first semester

Assessment method

Office hours

Friday 15:30 - 17:30 or via appointment.
