Program of the Astroparticle Physics course
A.A. 2015/2016
(Prof. R. Bernabei)
(6 CFU)

Brief references to fundamental interactions between particles, waves and particles, fundamental fields, and to the Standard Model of particles. Hystorical references. Phenomenology of Cosmic Rays. Energy spectrum, composition, galactic and extragalactic origin. Production and acceleration mechanisms. High energy cosmic rays. GZK effect. Experimental situation. Energy considerations and possible sources. Gamma rays. Detection techniques. The asymmetry of the Universe. The neutrino astronomy. Nucleosynthesis and cosmological neutrinos. Neutrinos from astrophysical sources. The Big Bang and the dark matter (DM) of the Universe. Role of the DM. Nature of the DM. Status and experimental signals. Gravitational waves and detection techniques.

Astroparticle physics, D. Perkins, Master series in Particle Physics, astrophysics and Cosmolgy, Oxford University + bibliography mentioned during lectures.