The double trouble of the missing matter in the Universe.

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The main goal of this course is to discus two important open issues of the Standard Cosmological Model.
Preferred prerequisite: Introductory course in Cosmology.

Program of the course.

The course presents the indirect evidence and discusses the prospects for detection of two different 'dark' matter components of our Universe.

Part 1 is dedicated to the so-called missing baryons problem.

The baryon budget at different cosmic epochs.
Observational evidences for the missing baryons.
Whereabouts of cosmic baryons: a theoretical perspective.
The Warm Hot Intergalactic Medium
The search for cosmic baryons.
State of the art, open issues and future perspectives.

Part 2 is dedicated to the Dark Matter [DM] problem as seen from a cosmological/astrophysical perspective.

Astrophysical evidences for DM.
Cosmological evidences for DM.
Alternative models (MOND theories) and the bullet cluster experiment.
Observational constraints on DM properties.
Indirect detection techniques.
Astrophysical targets, observations and results.