

SoA-100

An introduction to

Observational Astronomy and Cosmology

Astronomy is the study of the universe beyond the Earth's atmosphere. It is a science driven by observations, with links to mathematics, physics, chemistry, computer science, geophysics, material science and biology. Astronomy benefits from and also drives advances in technology. Cosmology deals with the Universe at large, its formation and evolution, formation of structures. Observationally there is no clear borderline between astronomy and cosmology. Both benefit from the same observational facilities and tools.

The aim of this course is to provide a broad introduction to the observational astronomy and cosmology, physics of stars and galaxies, observational tools and methods. Our objective is to familiarise students in the field of astronomy and cosmology (observational or theoretical) who might have had diverse background in physics subjects with the concepts, key observations, resources and tools that they will require during their PhD research study and beyond. I believe regardless of what research in cosmology or astronomy ones pursues, its fundamental to understand the nature of the data acquired and the analysis methods.

In particular we will introduce and discuss astrophysics of stars and the interstellar medium, galaxies and their broad properties, galaxies systems, structure formation. We will introduce telescopes and observational tools and techniques, useful softwares and their applications.

Lectures will be at **9:30am to 11:00** on **Sunday** and **Monday** in ROOF class. The second class is generally for practical astronomy, observing facilities and tools, softwares, surveys, etc although it may be used for usual lectures.

A large proportion of the assessment will be based on a project work assigned to each student individually. In addition, class essay and homework will be part of the assessment to encourage students to study the taught materials in a steady fashion.

Given the wide range of subjects I will point at specific chapter(s) of textbooks rather than introducing a single course textbook. A list of additional reading materials will also be provided. When required guest lectures will also be invited to cover specific topics in which they are specialised. When possible handouts will be provided after the lecture.

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