

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 which benefits from and also drives advances in technology. Cosmology deals with the Universe at large, its formation and evolution, formation of structures. Both of these 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 disciplines) with the key concepts, observations, resources and tools that they will require for pursuing astronomy or cosmology. Its fundamental to understand the nature of the data and the analysis methods upon which the models are built.

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 **9:00am to 11:00** on **Tuesdays** at the SoA. The course also involves practical astronomy, observing facilities and tools, softwares, surveys, etc. Students should expect to attend additional training which to be set up in the form of day long workshops.

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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