India Space Academy

Astronomy & Astrophysics Summer School 2025

Project Guidelines Handbook

Introduction

This handbook outlines the guidelines for project execution, reporting requirements, and submission processes.

Project Selection and Requirements

Participants must complete a minimum of **one** project and may undertake all **three** if desired. Students are encouraged to explore beyond the given projects, but participation in at least one of the predefined projects is mandatory.

For those with no prior experience in astronomy or Python, and unable to do the given projects:

- **Such participants must document what they have learned from classroom sessions and introductory astronomy videos available in the LMS Study Material Section.**
- However, attempting **at least one project** is compulsory, even if the final result is not obtained. The goal is to ensure engagement with the provided data and methodologies.

Available Projects

1. **Estimating the Dynamical Mass of a Galaxy Cluster**
2. **Predicting the Hubble Parameter and the Age of the Universe using Supernovae Ia Data**
3. **Identifying Spectral Lines in JWST MIRI Data**

In all the projects, you will get a handout that will provide instructions and the goals of the project. For the first two projects, you will get a Jupyter notebook for adding your code. Both the handout and Jupyter notebook have been especially designed as per the requirements of the students' understanding level.

The projects have been added to the GitHub repository, which is available in the study material section of your LMS. Also, the link to the repository has been pinned in the discussion groups.

The link is provided below, also for your reference.

Github: [GitHub - supremeKAI40/ISA-Summer_School_2025]

Open the repository, and access the project files from the project folder.

Project Workflow and Submission Process

- **Project Release:** Sunday, **15th June 2025**
- **Work Period: 15th June – 30th June 2025**
- **Submission Window: 1st July – 2nd July 2025**
- **Result Declaration: 3rd July 2025**

Report Preparation

Each participant must compile a structured report incorporating:

- Responses to questions outlined in the **Project Handout**
- The PDF of the **Jupyter Notebook** containing the written code and analyses
- A **PDF document** summarising their observations, interpretations, and relevant references (including articles or papers where applicable)

Make a single PDF of all the above PDFs.

Naming Format for Submission

All submitted reports must adhere to the following naming convention:
Report_Project Name_Admission Number

Submission Guidelines

- Reports must be uploaded in the **Report Submission Section** of the LMS, which will be visible only on the submission dates.
- If a participant wishes to revise and re-submit their report after results declaration, they may do so, but must clearly indicate the changes made.

Additional Considerations

- Students may explore additional astrophysical datasets and research questions beyond the prescribed projects.
- Collaborative discussions are encouraged, but reports must reflect individual understanding and interpretation.
- Those unfamiliar with astronomy and Python should document their learning experiences while attempting at least one project.