UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Laboratory of Data Acquisition

2425-1-F5802Q006

Aims

Provide core knowledge and skills for planning and conducting observations of galactic and extragalactic objects using optical telescopes. Provide the core knowledge and skills for the analysis and interpretation of the observations. Gain experience in the use of a telescope.

Contents

How to write a proposal, know-how on optical instrumentations, use of optical telescope (Bicocca Telescope), elements of data acquisition and data reduction, best practice for the analysis of data, how to present results in a scientific report.

Detailed program

Proposal writing: the structure of a successful proposal, scientific and technical elements, planning of observations

Know-how on optical instrumentations: imaging and spectroscopy, site conditions, estimates of integration times

Use of Bicocca Telescope: practical notions on the instrumentation usage at the telescope site or at the remote control room

Data acquisition and data reduction: from raw to science-grade data, extracting measurements from data and associated errors

Data analysis and scientific report: how to model observations and address the goal of the proposal, reporting results

Practicals: mini research projects using data from the Bicocca Telescope

Prerequisites

Undergraduate degree in physics.

This course is recommended to students wishing to follow an observational/experimental track during their studies

Teaching form

Introductory workshops on proposal writing, the characteristics of instruments, data reduction techniques, and planning and execution of observations. Hands-on sessions to conduct observations and data analysis using the Bicocca Telescope.

Teaching methods: introductory presentations (20 percent, frontal teaching) and laboratory work in groups (80 percent, interactive teaching)

All activities will be in English.

Textbook and teaching resource

All necessary material will be provided via handouts.

A usefeul reference is the book:
Mark Gallaway; An Introduction to Observational Astrophysics; 2016, Springer. [Available from the university library also as PDF and e-book]

Semester

First semester.

Assessment method

Written report on the mini-research project undertaken during the laboratory, and oral exam on the material presented in the report and discussed during the workshops. The final assessment evaluates both the theoretical and technical knowledge acquired during the course, and the methodology developed during the module relevant to devising, planning and executing an observational science programme.

Office hours

By appointment (via email).

Sustainable Development Goals

QUALITY EDUCATION | INDUSTRY, INNOVATION AND INFRASTRUCTURE