

Observational Techniques, semester 1, 2008-2009, Dan Maoz

Bibliography

1. C.R. Kitchin, “Astrophysical Techniques”, 4th edition
2. I.S. McLean, “Electronic Imaging in Astronomy”
3. G.D. Roth, “Compendium of Practical Astronomy, Vol. 1, Instrumentation and Reduction Techniques”
4. W. Press et al., “Numerical Recipes”
5. J. Binney and M. Merrifield, “Galactic Astronomy”

Requirements

1. Exercises (2 or 3 sets during the course)
2. Student lecture on selected topic (see below)
3. Final project (writing an observing proposal)

Final grade will be average of grades on the above 3 tasks.

Syllabus

1. Review of geometrical and wave optics
2. Optical aberrations
3. Telescope designs
4. Celestial coordinates
5. CCDs
6. IR arrays
7. Array-data reduction
8. Photometry
9. Signal-to-noise calculations
10. Linear model fitting
11. Spectroscopy: Principles and spectrographs
12. Spectral observations and reduction

As time allows, some of the following subjects will be covered by me, by student lectures, or not at all.

13. Polarimetry
14. Radio, sub-mm, UV, X-ray, and γ -ray telescopes and detectors
15. Neutrino, cosmic-ray, and gravitational-wave astronomy
16. Time-series analysis
17. Adaptive optics
18. Interferometry