

# Physics 629: Observational Techniques

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## Overview

Here is the official course description: *Introduction to tools and techniques of modern observational astronomy. Survey of instruments and capabilities at current telescope sites around the world and in space. Data reduction methods. Practical experience with Serin Observatory.*

Thus, this course deals with the tools and techniques of observational astronomy. The material covered will include most wavelength regimes, but will be unashamedly biased towards the ultraviolet, infrared and (especially) optical portions of the electromagnetic spectrum. The best way to learn how to take and reduce data is by doing it yourself, so you will be: (1) observing with our rooftop 0.5m telescope and reducing the data; and (2) reducing archival data from major ground and space-based facilities. Most of the reductions will be carried out with the IRAF data reduction package.

## Lectures

Lectures will take place during the fourth (4th) period on Tuesdays and Thursdays (1:10 – 2:30 pm) in Arc 107. There is a significant lab component to the course so I will, on occasion, lecture only once per week. See the course website for a detailed itinerary:

<http://www.physics.rutgers.edu/~pcote/phy629>

## Office Hours

Call, email or stop by whenever you like.

## Texts

The “official” text is *Astrophysical Techniques (3rd Edition)*: C.R. Kitchin, 1998, Institute of Physics Publishing. Some other useful books are:

*Optical Astronomical Spectroscopy*: C.R. Kitchin, 1995, Institute of Physics Publishing.

*Observational Astrophysics*: P. Lena, F. Lebrun and F. Mignard, 1998, Springer-Verlag.

*Detection of Light*: G.H. Rieke, 1994, Cambridge University Press

*Handbook of CCD Astronomy*: Steve B. Howell, 2000, Cambridge University Press.

*Astronomical Observations: An Optical Perspective*: Gordon Walker, 1987, Cambridge University Press.

## Labs, Assignments and Observing Proposal:

We will be making frequent use of the Serin Observatory, particularly during the the first half of the semester. Alas, we have only one telescope, and ours is not the only course which

relies upon this telescope. Thus, we will need to time share with other classes (and Mother Nature). Observing will be done in pairs; data analysis will be done individually. Fridays, Saturdays, and every other Thursday are reserved for Physics 629 observations; I'll maintain a web-based sign-up sheet for the observations. See the class website for details.

Near the end of the semester, you will write an observing proposal for a major ground- or space-based telescope (i.e., Gemini, VLT, Keck, CFHT, WIYN, HST), based on a topic of your choosing.

**Grades:**

Labs/Assignments .....	80
Observing Proposal .....	20