

# Astronomy for Teachers

John Parejko

27th December 2005

Start date: 11 January, Wednesdays, 8 weeks

Time: 4:30-6:30 pm

(two sessions will last until 8:30 pm)

Location: 919 Disque, Drexel University

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## Abstract

The purpose of this workshop series is to provide elementary, middle and high school teachers with a stronger background in astronomy and a knowledge of how modern astronomy is actually performed. All Philadelphia area public school teachers are invited to attend, and 6th grade teachers are particularly welcome. This series will provide 20 hours of credit applicable to the Act 48 of 1999 teacher enrichment requirements. This will not be a math intensive series, but it will use a little geometry and algebra. There is no cost for the workshop. The enrollment limit is 20 teachers.

Class will normally be 2 hours long, with a short break. Two of the classes will be 4 hours in length, with the second half devoted to time in the observatory. This observatory time will be used to connect the material with what we can see in the sky, as well as perform one of the 6th grade student labs. A primary focus of this series is "how we know what we know." To this end, I will provide a list of free and/or inexpensive online and print resources from NASA, AAAS, STSCI and various universities for further reading. We will develop and perform in-class projects, with the goal of providing the teachers with directly-usable projects for their students.

Short reading assignments will be assigned from web pages or handouts. There will be a short quiz at the beginning of each class to help me gauge what you already know, as well as check what you remember from the previous class. There will also be a final test 20-30 minutes in length, to see how much was retained during the series. I would like to cover the topics listed below, but I also would be happy to take suggestions for additional topics of interest.

## Topics

- Introduction, early astronomy, the history of astronomy, the zodiac. What do you want to know?
- Observatory session: What can we see? How do we measure?
- The Electromagnetic spectrum: our eyes can't see it all.
- The solar system
  - Earth, the moon, the seasons, solar and lunar eclipses
  - The Planets: where are they, what are they, how did they form, how we know.
  - Comets, Asteroids and other nearby space-junk
- Stars and stellar evolution
- Introduction to modern astronomy: observatories, imaging, databases
- Who are the astronomers? (Scenes from "Cosmic Africa")
- Galaxies and the universe
- Observatory session: digital imaging
- Space telescopes, "true color" pictures, the Hubble Deep Field
- Galaxy clusters and gravitational lensing
- Cosmology, dark matter and weird stuff. Final quiz