A Group-Project Based Course in Observational Astronomy

David Mitchell

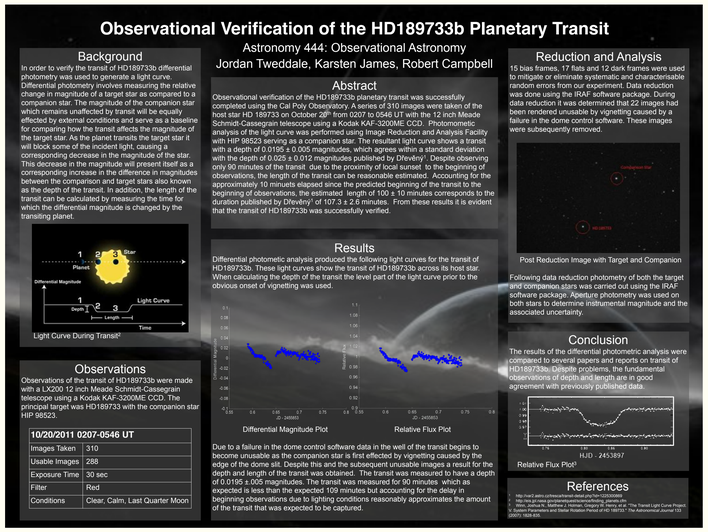
California Polytechnic State University

Gordon Research Conference
Colby College, July 2012

CAL POLY
SAN LUIS OBISPO

Abstract

ASTR 444 is an observational astronomy course at Cal Poly where the focus is on a group project, in accordance with Cal Poly's "Learn by Doing" motto. Students apply for telescope time, acquire their own data at the campus observatory, reduce and analyze all their data, and present their results at a class poster conference.



Observing

Students use the Cal Poly Observatory to acquire their science data. After one night of training, they apply for telescope time and are assigned 1-3 nights.

Students are responsible for finding their target objects, operating the telescope and camera, and closing down when they are finished, all with the oversight of a TA.

Lab

In addition to three one-hour lectures, students meet weekly for a 3-hour "lab" section, held in a computer lab. They have directed activities that develop the following skills:

- Using Starry Night
- Basic unix commands
- Using online astronomy resources such as Simbad, Aladin, and Horizons
- Choosing their science targets and planning observations
- Using IRAF

Poster Conference

Students present their project results at a class poster conference at the end of the quarter. Other students and faculty are invited to attend and ask questions, and vote on the best poster.

Through this process, students have a real sense of achievement and pride, and are excited to share their work with others.

Materials for this course are available at: http://astro.calpoly.edu/dsm

Student Projects

Students reduce and analyze their data with IRAF. Most of the projects are time-series photometry of variable sources.

Projects include:

- Extrasolar planet transits
- Eclipsing binary stars
- RR Lyrae stars
- Asteroid rotation periods
- HR diagrams of open clusters