Physics 157:  
Astronomy Instrumentation and 
Data Analysis Lab

To be offered Spring Quarter 2012 and in alternate years  
(CRN 93273)

Professor: Tony Tyson  
TA: Andrew Bradshaw

An advanced lab course in experimental physics covering: statistics, electronics,  
photon counting, CCDs, optics, imaging, spectroscopy, data processing, data  
exploration and analysis, and scientific writing. The course closely parallels Phy  
122, except that you will use astronomical instrumentation for two of your  
experiments and reports. Prerequisites: astrophysics specialization in physics  
major; Phy 102 or 104B; 105A; 110A; 110B & 115A (at least concurrently), plus  
scientific programming.  

This course satisfies the physics advanced lab requirement for Astrophysics Specialization majors only. Admission by PTA.

TR 3:10-4:00pm Lecture in 154 Roessler  
TR 4:10-7:00pm Lab in 154 Roessler  
With at least 3 of the Lab sessions at the  
Hutchinson 14-inch telescope from 9-11:30 p.m.  
(weather permitting)

Enrollment limited to 8-10 students – priority to  
Astrophysics Specialization majors for whom it satisfies a  
major requirement  

PTA-signature of Professor Boeshaar required for enrollment

Please e-mail boeshaar@physics.ucdavis.edu now if interested in  
taking Phy 157 Spring Quarter in lieu of Phy 122 Winter Quarter.
Physics 157 – Advanced Astrophysics Laboratory

Policies

Course Goals

1. Learn how to perform scientific experiments.
2. Learn tricks to control and estimate errors.
3. Learn how to write a good scientific report.

Professors

Pat Boeshaar 233 Physics
Tony Tyson 514B Physics

Teaching Assistant

Andrew Bradshaw 512 Physics

Recommended Texts


Laboratory Manuals

Go to the Experiments section.

Grading Policy

The photon counting experiment is worth 10 points; the exams, homework, and lab books are worth 20 points; each of the two other experiments is worth 35 points. Note that you will need to fully understand the photon counting experiment in order to get a passing grade on your two main experiments.
NO LATE REPORTS WILL BE COLLECTED.

Physics 157  Lab Calendar 2012

Not shown below are unannounced quizzes (dates TBD).

Week 1
(Tue. April 3)  Data and Error Analysis.
   Pre-lab Homework due.  Homework 1 assigned.
(Th. April 5)  Photon Counting.
   Homework 1 due.  Homework 2 assigned.

Week 2
(Tue. April 10)  Electronics Lab 1
   Homework 2 due.
(Th. April 12)  Electronics Lab 2

Week 3
(Tue. April 17)  Exam
(Th. April 19)  CCD Lab

Week 4
(Tue. April 24)  Begin 1st experiment.
(Th. April 26)

Week 5
(Tue. May 1)
(Th. May 3)
Week 6
(Tue. May 8) Systematic Error
(Th. May 10) Prep for Experiment 2
      CCD Data Processing
(Fri. May 11) Experiment 1 Report due.

Week 7
(Mon. May 14)
(Tue. May 15) Start your Observing Experiment
(Th. May 17) Electronics 3 (Melissinos pp 113-122)

Week 8
(Mon. May 21)
      Corrected Experiment 1 Report due at 4PM.
(Tue. May 22) CCD Data Analysis 1
(Th. May 24)

Week 9
(Tue. May 29) CCD Data Analysis 2
(Th. May 31)

Week 10
(Tue. June 5)
(Th. June 7) Last Lecture.

Observing, Observing Project Final Report due June 14.

NO LATE REPORTS WILL BE COLLECTED