

PH2900 (Astronomy) Course Information — 2007/08

Welcome to PH2900! Your lecturer this year is:

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Our lectures are on Mondays at 12 to 2 in the Munroe Fox Lecture Theatre (MFLT) and Wednesdays at 12 in MLFT. Around five of the scheduled hours will be designated as Problem Classes where we can go over the coursework and discuss additional examples of the material presented in the lectures.

Course website

Most of the course materials can be obtained through the PH2900 web site:

http://www.pp.rhul.ac.uk/~cowan/astro_course.html

Please consult this for announcements, problem sheets and other resources.

Lecture notes and books

Some lecture notes and other handouts will be distributed in class or posted on the course web site. The most important book for this course is:

H. Karttunen et al., *Fundamental Astronomy*, Springer, 2000.

Also useful are:

M Zeilik and S A Gregory, *Astronomy and Astrophysics*, 4th Ed., Saunders, 1998. (Next best core text.)

B.W. Carrol and D.A. Ostlie, *An Introduction to Modern Astrophysics*, Addison-Wesley, 1996. (Readable and massive.)

A.E. Roy and D. Clarke, *Astronomy, Principles and Practice*, 4th ed., IoP, 2003. (Clear mathematical examples.)

Robert C. Smith, *Observational Astrophysics*, CUP, 1995. (Good description of observational techniques.)

Aims and objectives

Astronomy is a large topic and there are limits on what we can hope to achieve in a single term. The main objectives of this course will be to understand how astronomical observations are made and interpreted, to introduce our nearest celestial neighbours in the solar system, and to understand current theories on how these bodies formed and what processes shaped their surfaces.

Problem sheets

Problem sheets are a vital part of this course and will form 10% of the mark. They should be handed in by 5:00 p.m. on the announced due date and can be turned in either in my pigeon hole or in my office, W262. Late submissions will be corrected, but no marks will normally be credited unless the delay is agreed with me before the deadline. If you are away ill, you should see me on your return.

Discussion of the problems with fellow students is encouraged, copying is not. Papers bearing a resemblance that cannot be accounted for other than by copying will not be credited.

Practical reports

Practical reports will form 20% of the course mark and will be assigned in parallel with the problem sheets. Some of the reports will involve complex problems, where you are intended to do a certain amount of research in the library or internet. Others will involve practical assignments using the telescope in the RHUL observatory or data from professional telescopes. A typical report would involve at least three pages of text not counting related figures, images, graphs, etc. For the practical assignments you are encouraged to work in groups, but the data analysis and writing up of the reports must be done individually.

As with the problem sheets, the practical reports should be handed in by the announced time and date and turned in either in my pigeon hole or office. Because of the unpredictable viewing conditions, there will have to be some flexibility for reports involving telescope work. If the weather refuses to cooperate we will substitute related practical exercises using existing data. If for any reason you have special difficulties or needs related to telescope work, please discuss this with me.

PH2900 Course outline (approximate by week)

1. Introduction and overview, coordinate systems, time keeping.
2. Optical telescopes and detectors.
3. The atmosphere and its effects on observations.
4. Brightness measurement (photometry).
5. Colour and spectroscopy.
6. Distance.
7. Mass and Kepler's laws.
8. A detailed example: extrasolar planets.
9. Introduction to the solar system.
10. Planetary geology.
11. Radio astronomy.