Astronomy 0087
Basics of Space Flight

Class meets:

T,Th 11:00 am —12:15 pm
343 Masonic Temple

Recitations:

Wed 1:00-1:50 (102 Thaw), 3:00-3:50 (11 Thaw)
Thu 1:00-1:50 (102 Thaw), 2:00-2:50 (11 Thaw)
Fri 11:00-11:50 (102 Thaw)

Instructor:

Dr. John Hillier
Associate Professor of Physics and Astronomy
407 Allen Hall, Phone 624-9213
(Physics Office: 100 Allen Hall: Phone 624-9000)

Office Hours:

Monday 2.00 - 3.00 pm, Tuesdays 12.30 - 1.30 pm
Anytime when I'm free (or by appointment)

Course Comment:

Self-contained course for students not majoring in the physical sciences. Course is mostly descriptive in nature, but some use of simple arithmetic, algebra and geometry since astronomy is a quantitative science.

Two Term Sequence (any order):

A0087 +

A0088 (Stonehenge to Hubble) or
A0089 (Stars, Galaxies, & Cosmology) or
P0089 (Physics and Science Fiction) or
G0870 (Planets)

Science and Engineering Majors:

Instead of taking A0087, those students with a science background interested in stars, galaxies, and cosmology WILL be better served by taking ASTRONOMY 0113 (MWF 3:00 to 3:50pm).

Text Book:

"Basics of Space Flight Learners' Workbook" which is available on the WWW at URL:

http://www.jpl.nasa.gov/basics/

Additional reference for basic astronomy:

Stars, Galaxies, and Cosmology, The Cosmic Perspective
by Bennett, Donahue, Schneider, Voit (Addison-Wesley)

"Astronomy -- From the Earth to the Universe"
Pasachoff

"Explorations -- An Introduction to Astronomy"
Arny (McGraw-Hill)

"Astronomy -- A Beginner's Guide" [or "Astronomy Today"]
Chaisson & McMillan (Prentice-Hill)

Universe
Kaufmann (W. H. Freeman and Company)

Study Technique:

Read the previous set of class notes.

Read the notes/chapter BEFORE lesson.

Simple note taking in class:

What does the lecturer emphasize?

Clarification comments.

Do not attempt to copy overheads. These notes will be made available to you in PDF format at my web site:

http://www.pitt.edu/~hillier

Summarize each class (utilizing the text book, lecture material and other resources).

Attempt all homework.

Use the online resources that I will give as the course proceeds.

Exam Policy

Students MUST bring their ID cards to exams.

Students MUST bring a No 2 pencil & eraser to exams.

No calculators or notes permitted.

Cheating results in an immediate failure, and a report will be sent to the Dean.

Exams

First 3 exams (50 minute class tests):

Thursday, Sep 26th -- 1st

Thursday, Oct 31st -- 2nd

Thursday, Dec 5th -- 3rd

Not cumulative, cover ~1/3 of the course material.

Final exam (2hrs):

Wednesday, Dec 11th (2:00 to 3:50 pm)

Cumulative.

Exam questions:

True-false, multiple-choice, or reading comprehension multiple-choice

Make-up exams will not be given.

NB: The instructor MUST be informed PRIOR to the exam if a student is to miss an exam for a reason which is NOT an emergency. The instructor reserves the right to reject any excuse which THEY deem not to be sufficient.

Grades:

80% of the course grade will be based on the 3 highest exam scores.

10% of the grade will be for class Quizzes and in class attendance.

These quizzes will be given at random times.

10% of the course grade will be allocated by the recitation instructors.

Course grades will be determined from a curve of the distribution of scores on the exams (e.g., 10 to 20% of the students will get As, etc.). However, a student scoring

90% will receive at least an A,

78% will receive at least a B,

65% will receive at least a C,

50% will receive at least a D

A student who is satisfied with their grade after the first 3 exams does not need to take the final. Students who have missed one of the four exams will not have the option of dropping their lowest grade. On the Monday (or early Tuesday) after the 3rd exam, I will post your final grades assuming you do not take the FINAL. These grades cannot go down. However, they may improve if you take the final.

Homework:

Each week homework will be assigned. It will consist of problems, descriptive answers, multiple choice questions, and assigned reading. Exam questions may be taken from the assigned reading, and the homework. Mathematical problems on the homework tend to more difficult than those on the exam, so DON'T panic.

Only one question will be completely graded, but solutions will be provided to all questions.

A mark will be assigned on the basis of the graded question, overall neatness, and the number of questions seriously attempted.

No late homework will be accepted with out prior approval of your recitation instructor or myself. Homework more than a week late will not be accepted under any circumstances.

Important dates:

Monday, Sep 6th (Labor Day, University closed)
November 27-Dec 1 (Thanksgiving recess)

COURSE OUTLINE

Brief Overview of the Universe
The Solar System
Coordinates and Time
Gravity and Mechanics
History of Space-Flight
Rockets
Orbits and Trajectories
Electromagnetic Phenomena
Remote Sensing
Mission to Mars
Life on other worlds

The order of these topics may change.

At the end of each class, I will indicate what will be covered in the following lecture.