

ASTRONOMY 153 – Moons and Planets - Brief Syllabus

John Perry - john.perry@uvm.edu

Office hours: 1 hour before and after each class

Keep checking UVM Blackboard for course updates

Purpose: A wealth of observational data in the last 30 years has revolutionized solar system astronomy, as well as our knowledge of exoplanet systems. We first review the parameters of the Drake equation as a review of pertinent 005 topics. It predicts the number of life forms in our galaxy. Current topics of research concerning the planets and moons in our system are then discussed, with emphasis on the underlying observations and logic. Exoplanet systems are also addressed in detail. The chances of discovering life are emphasized throughout.

Prerequisite: Astronomy 005, Math 10 or permission

Possible Topics List: (not in order)

Course intro and the definition of “Planet”

Astr 005 review: deriving terms of the Drake equation

Origin of the solar system

Necessary environments for life and habitable zones

Sun’s angular momentum problem, and possible solutions

Earth’s Lagrange points

Origin of Earth’s water

Our lopsided moon and the lunar Maria

Formation of moons

Details of the radar measurements of Venus’ rotation

What started the runaway greenhouse effect on Venus?

Could life exist in the atmosphere if Venus?

Terraforming Venus and Mars

How did Mars lose most of its atmosphere?

Liquid water on Mars

Liquids on Europa, Enceladus and Titan

Pluto history and New Horizons

The search for Earthlike exoplanets Detecting exomoons

Asteroid detection, diversion and mining

The SETI program

Tabby’s star

Evidence for and against Planet X

Recommended Text: Websites

Grade Structure:

- 8 assignments worth 6% each. Each will consist of 23 multiple choice questions drawn from the current 3 classes, plus 2 drawn from the current Astronomy Picture of the Day website (APOD). Each will be posted on a Friday morning, due at 5pm on the Monday 10 days later. Many answers will have to be worked out, while others are explicit in the lectures.

- 3 exams worth 15% each, format TBD.

- Class participation worth 7%