AST 105
Introduction to the Solar System

Fall 2018

Administrative Details

- Professor: Frederick M. Walter
  - ESS 459
  - 632-8232
  - frederick.walter@stonybrook.edu
  - Office hours: MWF 9-10 or by appointment

Please put AST105 in the subject line if e-mailing

1. TA: Olof Salberger
   - Olof.Salberger@Stonybrook.edu
   - Office hours: TBD (in ESS 457A)

Course Organization

- Two lectures weekly
  - TuTh 10:00-11:20; Humanities 1003
- Two in-class midterms (20% each)
  - Thursday Sept 20
  - Thursday Oct 18
- Weekly in-class quizzes (10%)
- Practical Exercises (20%)
- Essay (10%)
- Final exam Fri Dec 20, 8:00 AM (20%)

AST 105: Introduction to the Solar System

Syllabus

Fall 2018

Lecture: Tuesdays and Thursdays, 10:00 AM - 11:20 PM **Room**: Humanities 1003

Instructor: Prof. Fred Walter (ESS 459; 632-8232; frederick.walter at stonybrook.edu)
Office Hours: MWF 9-10, or by appointment

TA: TBD
Office Hours:

Syllabus revised 17 August 2018

Lecture Schedule

Week	Date	Topics	Reading
1	Aug 28 Aug 30	Introduction; Scales of Space and Time; The sky	1,4
2	Sep 6	The Beginnings of Astronomy	2, 4
3	Sep 11 Sep 13	Physics I: the Universe in Motion Physics II: Matter and Light	3, 4 5
4	Sep 18	My, what big eyes you have!	6
4	Sep 20	Midterm 1	Chapters 1 - 6
5	Sep 25 Sep 27	Overview of the Solar System The Sun	7 15, 16
6	Oct 2 Oct 4	The relation of the Sun to the Earth Formation of the Solar System	15.4 7.4, 14
7	Oct 9 Oct 11	The Earth The Moon	8 9
8	Oct 16	Terrestrial Planets	9, 10
8	Oct 18	Midterm 2	Chapters 7-10, 14-16 (plus 1-6)

9	**Oct 23 Oct25**	**Barsoom**	**10**
10	**Oct 30 Nov 1**	**Jovian Planets**	**11**
11	**Nov 6 Nov 8**	**Pluto The Icy Moons**	**12**
12	**Nov 13 Nov 15**	**Asteroids Other Debris**	**13**
13	**Nov 20**	**Exoplanets**	**17**
14	**Nov 27 Nov 29**	**Exoplanets**	**21**
15	**Dec 4 Dec 6**	**Life in the Universe**	**30**
	Dec 20	**Final Exam**	**1-17, 30**

*** note: this plan is subject to change ***

Readings

Readings from the textbook should be done **BEFORE** the lecture. That way the lecture can be used to clarify, and not just introduce, concepts.

Numbers refer to chapters in the textbook.

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Text

Astronomy by Andrew Fraknoi, David Morrison & Sidney C. Wolff

Published by OpenStax (Rice University)

This book is required.

This book is an Open Educational Resource available on-line for no cost.

Expectations

- This is a rigorous science course.
- We will do quantitative calculations
- You are strongly advised to attend lectures
- You should expect to put in 6-9 hours outside class, reading the material and doing homework.

Goals

- Learn to think critically
- Understand the origins, evolution, and current state of the solar system
- View the major bodies of the solar system as worlds
- Understand how we identify, and why we search for, exoplanets

Learning Objectives

A student in this course must be able to

- think critically about data, and
- synthesize disparate facts to reach a conclusion in almost any area where the data can be quantified.

A student mastering this course will understand:

- the origins of astronomy as a science, and will be able to replicate the logical deductions that led the Greeks to a basically correct interpretation of the Solar System
- Kepler's Laws, Newton's Laws, and their applications within the Solar System
- electromagnetic radiation, and how we use it to understand the Solar System
- the nature of the major and minor bodies in the Solar System
- how the Solar System formed
- the Sun and its influence on the Earth
- the possibilities for life on Mars, or elsewhere in the Solar System
- how we discover and characterize exoplanets