

# ASTR 430: The Solar System

**Time:** W/F 2:00-3:15 pm

**Lecture Room:** CSS 2428

**Office Hours (CSS 1207F):** W/Th 3:30-4 & by appt.

**Phone:** (301) 405-1045

**Dates:** Sep 2, 2015 - Dec 11, 2015

**Professor:** Jessica Sunshine

**email:** [jsunshin@umd.edu](mailto:jsunshin@umd.edu)

**Course Website:** [elms.umd.edu](http://elms.umd.edu)

**Communication:** Announcements and class email list via ELMS. Please check that ELMS has your preferred email. Note my email has no "e", it is jsunshin (@umd.edu)

**Textbook:** *An Introduction to the Solar System, Revised: 2<sup>nd</sup> Edition (June 27, 2011)* Rothery, McBride, and Gilmour, Cambridge University Press, ISBN-13: 978-1107600928, Amazon New Paperback: \$42 w/shipping

## Course Description

This course is intended for juniors and seniors who are majoring in the physical sciences or related engineering disciplines. ASTR430 will provide a scientific foundation to help answer fundamental questions about our Solar System by studying rocky and icy bodies throughout the Solar System. The emphasis of this course is physical reasoning and will use information from geology, geochemistry, astronomy, and physics. Your challenge will be to master this diverse and extensive body of knowledge to understand the processes that affect the origin and evolution of our Solar System.

Solar System courses and their textbooks often march methodically from the innermost objects to the outermost: *Chapter 1: Mercury, Chapter 2: Venus*, etc. Instead, we will consider important geologic, physical and chemical processes *across* the Solar System as manifested on planets, moons, and small bodies. We will consider historical ideas that have failed, been modified and/or survived over the centuries, as well as discuss modern controversies, and the most current data.

In addition to traditional textbook reading and lectures, this course will also develop several of the key skills required to be a successful professional: critical reading, writing, and oral presentation. These skills are important to your future life whether you go on to a career in academia, industry, teaching, or Wall Street. Thus in addition to your textbook, you will be expected to read papers from the scientific literature covering major discoveries in planetary science. All students are expected to participate in on-line and in-class discussions of all papers, to lead two discussions, and to write a term paper on one of these "Special Topics".

## Prerequisites

ASTR121 and PHYS270/PHYS271 or PHYS273 are prerequisites for this course. If you have not taken these courses (or their equivalent), please see me right away.

## Course Expectations

### **Attendance: Show up to class, twice a week, yes this includes every Friday afternoon!**

You are expected to attend all lectures as they will, by definition, emphasize material *not* in the textbook. Your grade also depends on in-class participation. For classes that involve student led Special Topics/journal papers, discussion is particularly critical. This is an upper level science course and you are expected to contribute meaningfully to these discussions.

**Preparation:** I expect you to be ready to work. We are covering some fascinating topics, which span a significant amount of material. Rather than problem sets, the **bulk of your work for this course will be READING and THINKING** about what you read from your textbook and from journal papers. You will only learn this material if you **read the textbook AHEAD of lectures** and you can only participate in the discussions of Special Topics if you have **READ the papers ahead** of time. Since there will be only occasional other assignments (either in- or out of class) most of your work for this course will be **READING**.

**Thus READING, I think you now understand, is fundamental to ASTR430.**



In all cases as you read, be aware of what you don't understand so you can come to class with useful questions. It is also helpful to peruse your class notes sometime before the next lecture to make sure that everything is clear.

**Discussions:** I strongly encourage you to ask questions in class, during office hours, and on the **ELMS Discussion General Board** for our class. For each Special Topic, we will have specific discussion threads set-up. Sometimes the best way to understand something (or check that your understanding is correct) is to try to explain it to someone else. I encourage collaboration. I generally check those boards to make sure questions are getting answered, so unless it's to remind me that I haven't checked in a while, please avoid the temptation to email me directly: if you have a question, chances are a number of other students have the same question. During class, you are expected to participate by asking and answering questions. This includes interrupting (politely of course) lectures for clarifications and actively engaging in discussion of journal papers and Special Topics.

**Other Classroom Rules:** Please, please turn off all cell phones, tablets, laptops etc, or risk ridicule by me. No newspapers or outside reading please.

- No unauthorized chatting in class. If you have a question – ask me, not your neighbor.
- Arrive on time. The beginning of class is when I make important announcements
- In short, show respect to your professor (me), your neighbors, and yourself.

## Coursework

### **Special Topics/Journal Articles**

A major portion of this class consists of Special Topics, which will have semester long

components. It will culminate in a Term Paper, which will be assigned as both a Draft and Final efforts. In addition, each student will present and then lead a discussion of a Journal article(s) related to this topic. All students will be expected to read the journal articles, and participate in on-line discussions prior to the oral presentation and in-class discussions during the presentation. Topics and further details will be discussed in class.

### Participation/Assignments

In addition to discussions related to the Special Topics, we will have discussions of issues presented in the text and in lectures. Occasionally I may also assign a short assignment or quizzes. Each will have its own instructions on when how they are to be completed (in-class, on-line, uploaded, on paper; DO NOT email me your homework under any circumstances) and will have a specific deadline. **There is no way to turn in late work;** that is what is meant by a "deadline."

### Final Exam

The final exam will be cumulative, *i.e.*, will cover all the material presented during the, both in the textbook/lectures and in the Special Topics. The exact format will be defined at a later date.

According to the Registrar, ASTR430 meets at a non-standard time, and the official exam time/local will not be known until mid-semester. Based on our time slot, it seems likely our final exam will take place on Thursday, December 17 at 1:30-3:30pm. **Please stay tuned to the UMD Schedule of Classes** (and the ASTR430 Lecture Schedule on ELMS) for updates.

### Grading

Grades are based on a percentage basis with different types of work weighted as shown:

Class Weighting	Participation/Assignments	Paper Draft	Oral Presentations	Final Paper	Final Exam	Total
Percentage	30%	15%	20%	15%	20%	100%

Letter grades will be assigned based upon your cumulative score. I reserve the right to adjust the following based on class averages; however, any adjustment will make it *easier* to get a given grade, never more difficult. Here is a rough guide as to how your percentage relate to your final grade. Plus/minus modifiers will be used for border line scores on the final grade.

Nothing would make me happier than to give you all A's after a year of great discussions, but please note if you skip or minimize your effort in any aspect of your work, it really will affect your final grade.

Percentage	90%-100%	80%-90%	70%-80%	60%-70%	<60%
Letter Grade	A	B	C	D	F

There is **no extra credit**, but you can always improve your grade through participation!

## **Absence Policy**

The official University policy on how to deal with absences can be found at:  
[www.president.umd.edu/policies/v100g.html](http://www.president.umd.edu/policies/v100g.html)

If campus is closed for any reason, the scheduled material/deadlines will be delayed to the next lecture.

If missing a class is **UNAVOIDABLE**, be sure to see if you can borrow another student's notes and that you understand what was covered. If not, please come to office hours. However, any class period could include a participation of some type, which can't be made up.

**Your Special Topic oral presentation, rough draft, final term paper, and the Final Exam are Major Grading Events.** If you are not able present for these events and have a **VALID EXCUSE** as outlined in the Academic Information section of the schedule of classes, you may take a make-up for the final (which could be more difficult, *i.e.* and oral exam) and will be given a one-week extension on your Special Topic work. However, you must:

1. Contact me by email or phone **before** you miss the event if physically possible **and**
2. Submit a valid written excuse for your absence within one week after the regularly event (by US Postal mail if necessary!). *Note: A self-signed note is insufficient*

There is rarely an excuse for not being able to at least call me and leave a message.

For excused absences known far in advance (*e.g.*, religious observance or participation in activities at the request of University authorities), you must notify me and present appropriate documentation as soon as you know and no later than two weeks before the event. **IF** the absence will occur during a Major Grading Event (related to your Special Topic or the **FINAL**) please, please, tell me right way!

## **Disability Accommodation**

Students with a documented disability who require academic accommodations should contact me as soon as possible. If you suspect you might require an accommodation or specialized help within this, or any class, please feel free to discuss this with me during office hours, or with the Disability Service Support office ([www.counseling.umd.edu/DSS](http://www.counseling.umd.edu/DSS)).

## **Academic Integrity**

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards during **ALL** aspects of this course. It is

very important for you to be aware of the definitions and consequences of cheating, fabrication, facilitation, and plagiarism or helping any other person to do any of these things. These rules apply to all work, including term papers, other in-class or out-of class assignments, as well as exams. As a part of these rules, you must give credit to any book (including the course textbook!), published article or webpage that you have used to help you with a particular assignment.

More information can be found at the Student Honor Council: ([www.shc.umd.edu](http://www.shc.umd.edu)) and the Code of Academic Integrity ([www.president.umd.edu/policies/iii100a.html](http://www.president.umd.edu/policies/iii100a.html)).

The University takes these issues extremely seriously, as do I.

To underscore the need for academic integrity, the University asks you to write the following pledge on any assignment or exam:

*"I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination".*

## **Course Evaluations**

CourseEvalUM will be open for students to complete their evaluations later in the semester. Students can go directly to the website to complete their evaluations. You will be alerted when the evaluation sites are ready closer to that time via your official University e-mail account.

The expectation is that all students will complete these course evaluations. **This is YOUR chance to anonymously evaluate this class: please use this opportunity.** I very much wish to alter future courses based on your constructive criticism.

You are of course welcome to give me feedback positive or otherwise in person.

## **Copyright Issues**

Class lectures and other materials used in ASTR 430 are copyrighted to © *Jessica M. Sunshine* and may not be reproduced, except for personal use, without written permission. Selling, posting, or distributing copies or modified copies of instructors' course materials, lecture notes, being paid to take lecture notes (except under University of Maryland sponsorship), or assisting another person or entity in selling or distributing those materials is a violation of the University Code of Student Conduct, Part 9(k).

*Last Modified: J. Sunshine, August 2015, subject to change.*