Course Syllabus: AST 205: Introduction to Planetary Sciences Fall 2025

An introduction to the solar system for the student with background in mathematics or physical sciences. A survey of the planets, comets, asteroids, and interplanetary medium, based on the latest Scientific discoveries. Not for credit in addition to AST 105. *Prerequisite:* PHY 125 or 131/133 or 141. *3 credits.*

Instructor: Prof. Alan Calder
alan.calder@stonybrook.edu
IACS (Laufer) L164
(63)2-1176

Grader: Josh Martin
joshua.martin.1@stonybrook.edu
ESS 352

Class Meeting: Tuesdays and Thursdays 11:00 AM – 12:20 PM, ESS 079.

Office Hours:

Calder: M 10:30 AM–12:00 PM, Th 1:30–3:00 PM ESS 438. Other times by appointment.

Josh Martin: T 12:30–1:50 PM, W 1:00–2:30 PM, ESS 352. Other times possible by appointment.

Text: *Planets and Planetary Systems* by Stephen Eales. Also recommended is *Cosmic Perspective* by Bennett et al.

Evaluation: 45% Hour exams, 25% Homework, and 30% Final exam. Grades will be posted on Brightspace. The instructor will discuss grades during office hours but for privacy reasons will not report or discuss grades via email.
Final letter grades will be assigned on a standard scale (values in percents): $100 <$ A ≥ 93, $93 <$ A$- \geq 90$, $90 <$ B$+ \geq 87$, $87 <$ B ≥ 83, $83 <$ B$- \geq 80$, $80 <$ C$+ \geq 77$, $77 <$ C ≥ 73, $73 <$ C$- \geq 70$, $70 <$ D$+ \geq 67$, $67 <$ D ≥ 60, $60 <$ F ≥ 70.
At the discretion of the instructor, a curve of additional points added to raw scores or a similar adjustment may be applied prior to assessing letter grades.

Homework: Homework will be assigned periodically and will be typically due the following week. Each homework assignment will have the approximately the same weight in the total grade, and will apply to a total of homework points earned during the semester. Students sometimes discuss the homework as part of the learning process, but the solutions turned in should be worked out by the student alone. Discussions should be limited to the qualitative aspects of the problem (i.e., what is it asking? how does one approach the problem?). All calculations and writing up of the problem solution must be done alone. Copying will not be tolerated. Use of Artificial Intelligence in addressing homework should be treated as discussion as described above. Homework solutions copied from AI sources will not be tolerated. Please see the section on academic integrity below.

Exams: Two hour exams and one final exam. The midterms will cover the material since the previous exam. The final is cumulative. Questions on the exams will be drawn from the lectures, material presented in recitations, homework assignments, and the assigned chapters of the text. Students are expected to arrive on-time for exams, and any students arriving late may be denied the opportunity to take the exam. Missed exams may not be made up! With advance notice and/or careful documentation of extenuating circumstances, an exam may be excused or accommodations made. Students arriving late to an exam may be denied the opportunity to take the exam.

In the event of a missed exam, excuses will be judged on a case-by-case basis. Valid excuses include but are not limited to being an athlete in University-related sporting event, jury duty, and a medical emergency. If such a situation arises, students should notify the instructor in advance and be prepared to provide documentation. Issues with missed exams must be resolved within one week of the exam date.

Final Exam: Dec. 11 11:15 AM - 1:45 PM as scheduled by the University Registrar. Nota Bene: The ultimate authority on the date and time of the final is the University Registrar. Students should monitor the exam schedule on the Registrar's web page (https://www.stonybrook.edu/commcms/registrar/registration/exams.php) during the semester as changes have happened in past semesters. Please also note the student responsibility statement on the Registrar's exam schedule page.

Student Accessibility Support Center Statement: If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Student Accessibility Support Services. Information might be found on the website https://ehs.stonybrook.edu/programs/fire-and-emergency-services/alarms-evacuations.php?accordion=content-d19e489.

Academic Integrity: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Professions, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Electronic Communication: Email to University email accounts is an important way of communicating for this course. For most students the email address is 'firstname.lastname@stonybrook.edu', and the account can be accessed here: http://www.stonybrook.edu/mycloud. ***It is your responsibility to read your email received at this account.*** For instructions about how to verify a University email address see this: http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo. You can set up email forwarding using instructions here: http://it.stonybrook.edu/help/kb/setting-up-mail-forwarding-in-google-mail. If you choose to forward your University email to another account, the University is not responsible for any undeliverable messages.

Religious Observances: See the University policy statement regarding religious holidays at https://www.stonybrook.edu/commcms/registrar/calendars/religious_holidays.php#2025. Students are expected to notify the course professors by email of their intention to take time out for religious observance. This should be done as soon as possible but definitely before the end of the 'add/drop' period. At that time they can discuss with the instructor(s) how they will be able to make up the work covered.

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Note that the lecture topics and dates are subject to change depending on progress of the class. Exam dates will not change.

class #	month	day	chapter[a]	topic
1	Aug.	26	1	Organization/Tour of Solar System
2	Aug.	28		Basic Observations (seasons, lunar phases,eclipses)
3	Sept.	2	6	History of Astronomy/Greats
4	Sept.	4	6	Kepler's and Newton's Laws
5	Sept.	9		Light and Spectra
6	Sept.	11	1.2	Luminosity, Planetary Temperatures
7	Sept.	16	1.3 8.1 8.2	ISM and Star Formation
8	Sept.	18		Sun and Stars
9	Sept.	23		Sun and Stars
10	Sept.	25	4	Stellar Structure and Magnetism
11	Sept.	30		**Midterm #1**
12	Oct.	2	3	Terrestrial Planets
13	Oct.	7	3	Terrestrial Planets
14	Oct.	9	5	Terrestrial Atmospheres
-	Oct.	14		Fall Break (no class)
15	Oct.	16	6	Moon and Tides
16	Oct.	21	4,5	Jovian Planets
17	Oct.	23	4,5	Jovian Planets
18	Oct.	28	6	Satellites
19	Oct.	30	6	Satellites/Rings
20	Nov.	4		**Midterm #2**
21	Nov.	6	7	Asteroids
22	Nov.	11	7	Comets
23	Nov.	13	7	Meteorites
24	Nov.	18	7	Dust
25	Nov.	20	2	Exoplanets
26	Nov.	25	2	Exoplanets
-	Nov.	27		*holiday: no class*
27	Dec.	2	8	Origin and Evolution
28	Dec.	4	9	Life in the Universe
Final	Dec.	11	1-9	**Final exam** 11:15 AM - 1:45 PM (Comprehensive)

[a] Be sure to read the assigned reading before each class!

Religious Holidays: If the schedule of exams is in conflict with your religion's holidays, please let me know in an email by the end of the first week of instructions and I will do my best to accommodate your needs. Please note that I cannot make changes in the course schedule after the first week of classes. No consideration will be made if someone approaches me in this matter at a time close to the exam date.

Homework sets will be assigned during the semester with a due date given at the time of the assignment and accommodations will be made for religious holidays. In the event that a homework due date falls on a religious holiday, you must notify me within 24 hours of the assignment for an adjustment of the due date. Homework assignment may always be turned in early to avoid a conflict with a religious holiday.