

AS 101: The Solar System (Fall 2016)

Instructor:

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Office hours: Wednesdays 1:30-3:30 pm, Thursdays 4:30-5:30 pm or by appointment

Teaching fellows:

Aurora Kesseli (aurorak@bu.edu)

Office hours: Mondays 9-10 am, Wednesdays noon-1 pm, Fridays 2-3 pm in CAS 524

Taylor Morris (tamorris@bu.edu)

Office hours: Tuesdays 1-2:30 pm, Thursdays 11-12:30 pm in CAS 524

Lecture meeting time and location:

Mondays, Wednesdays, and Fridays at 11-noon in CAS 522

Lecture schedule can be found below.

Course Description:

AS101 is an introduction to the Solar System. In order to understand the Solar System in the context of the Universe, we will explore key concepts in astronomy, how planets form, and planets orbiting other stars in addition to the Sun and planets in our Solar System.

The goal of the course is to help students understand some basic physical principles, the scientific process, and to appreciate our place in the universe. Note that the syllabus may change based on class progress. Changes will be announced in class.

Prerequisites:

This course is taught at the introductory level and is intended for students from any college at the university. There are no requirements beyond high school level algebra and science. The Department of Astronomy also offers a more advanced introductory course (AS 202) for those prospective or active physical science or engineering majors.

Required Textbook:

For this course we will be using the Seventh Edition of “The Solar System: The Cosmic Perspective,” by Bennett, Donahue, Schneider, and Voit published by Pearson. Note that the bookstore is selling the Eighth Edition. Either is fine to use. Copies of the textbook are on reserve in Mugar and the Astronomy Library, which is on the 5th floor of CAS. If you use the textbooks from the Astronomy Library, please do not remove them from the library.

Website:

Course materials and grades will be posted on learn.bu.edu.

Grading:

- 15% homeworks
- 40% in-class exams
- 25% final exam
- 5% participation
- 15% lab exercises

All requests for grading corrections and changes need to be made in writing.

Homeworks: The purpose of the homeworks is to keep you on track with the readings and give you feedback on how you are doing in the course. There will be 4 homeworks and none will be dropped. The homeworks will consist of short essays and math problems and will be assigned in lecture. Homeworks will be due on Mondays by 11am in the Homework Box located in the Astronomy department office (CAS 514). Late homeworks must be turned in directly to the instructor or a TF and will have 20% taken off for each day they are late. Solutions to the homeworks will be posted on Friday morning. No homeworks will be accepted once solutions are posted. Please note that homeworks must be done entirely in blue/black ink or in pencil. They should show all work and should contain your name, BUID, and should be stapled. Homeworks that do not satisfy these requirements will not be graded.

Exams: The exams will test your knowledge of ideas discussed, simple problem solving skills, and your ability to write brief essays about Astronomy. We will have 3 in-class exams and one final exam. The lowest score of the in-class exams will be dropped. No make-up exams will be given. If you need to miss an exam for any reason, that will be the exam that you drop as your lowest score. You cannot miss the final exam and there are no opportunities to take it at a different time. If you have been certified as needing to take an exam under special circumstances, please see me privately. The first exam will cover Chapters 1-3. The second exam will cover Chapters 4-6. The third exam will cover Chapters 7-8 and 11. The duration of each in-class exam will be one academic hour or 50 minutes. There will be one final exam which will cover Chapters 12-14. The time and location of the final exam will be announced by the registrar in early October.

Participation: In order to help engage you in the material, it is expected that you participate in class. Your participation grade will be based on the completion of in-class minute papers. These minute papers will be done randomly and cannot be made up so attendance is strongly encouraged. The three lowest minute papers will be dropped in calculating the final grade. Additional drops will not be granted unless the student has a letter from a Dean.

Lab Exercises: This is a laboratory course where lab reports constitute a major part of your final grade. The lab grade will be based on 6 indoor day lab exercises and 2 outdoor night lab exercises. The lowest two scores from the labs will be dropped. Note that since this is a lab course, if you fail the lab component, you fail the class. That is, if you have an A on all your homeworks, exams, and participation, but fail the lab component, you will get an F in this course.

Day Labs

The day labs will be performed in assigned sections lead by your TF. You must be enrolled in one of the lab sections (A2-A7) in addition to the lecture (A1). The lab report will be due one week after completion of the lab. Late day lab reports will have 20% of the maximum possible score deducted for each day they are overdue (i.e., labs will not be accepted more than 5 days past the deadline). The day lab schedule can be found below. Labs must be printed out and brought to lab. They can be downloaded from <http://www.bu.edu/astronomy/academics/undergraduate-studies/manuals/>

Night Labs

The Department of Astronomy's J. B. Coit Observatory is located on the roof of the CAS building. Night labs will be done here and each lab should take about an hour to complete. There are two night labs. Night Lab #1 occurs during the first half of the semester and Night Lab #2 occurs during the second half of the semester. It is essential not to wait until the end of the possible observing sessions to observe since weather is unpredictable. Typically, there are only about 6-8 clear nights per semester. If you miss a Night Lab because the last few weeks of that session are cloudy, no make-up will be possible. To check if the observatory will be open on a given night, call 617-353-2630 for a recorded message about 1 hour before the lab start time. Choose option #1 to see if the night lab will be held that night and option #2 for other night lab information. The lab report will be due one week after completion of the lab (unless you attend the lab after Dec 5th). All night labs done after Dec 5th are due at the beginning of the last lecture (Dec 12th). Late night lab reports will have 20% of the maximum possible score deducted for each day they are overdue. Lab reports will not be accepted after Dec 12th. The night lab schedule can be found below. Labs must be printed out and brought to lab. They can be downloaded from <http://www.bu.edu/astronomy/academics/undergraduate-studies/manuals/>

Planetarium Visit

The Boston Museum of Science has a planetarium capable of displaying the night sky as seen from any point on Earth. We have arranged a planetarium visit (see last page of syllabus for dates). Note that it is not possible for us to schedule an additional planetarium visit.

Attendance & late policy:

You are expected to attend class. If you miss a class, check the course website for any assignments or news and talk with a fellow student to learn what else you missed. Under normal circumstances, late labs and homeworks will have 20% of the maximum possible

score deducted for each day past the due date. The exams must be taken at the scheduled date and time.

Classroom etiquette:

Please arrive punctually for the start of class and remain for the duration of the class. If you arrive late or depart early, try to minimize the disruption this causes to other students. Turn mobile phones off during class. Students who interfere with the academic process of the class will be asked to leave the class. This includes, but is not limited to, students that are continually late, speak while the instructor is speaking during class, or do not participate in the in-class activities.

Academic integrity:

Group study is encouraged, but work you hand in must be your own. Your lab reports should not be copied. Work that is copied will not be given any credit. If an answer in a homework question or a lab report requires written sentences, do not copy your answer directly from the textbook, a website, or any other source. All students are expected to follow the BU Academic Conduct Code (www.bu.edu/academics/resources/academic-conduct-code/). Cases of suspected academic misconduct will be referred to the Dean's Office.

Class Schedule:

Lectures

<i>Week #</i>	<i>Date</i>	<i>Topic</i>	<i>Chapter</i>	
1	1	Wed Sep 7	Welcome	-
	2	Fri Sep 9	A Modern View of the Universe	1
2	3	Mon Sep 12	Chapter 1 continued	1
	4	Wed Sep 14	Chapter 1 continued	1
	5	Fri Sep 16	Discovering the Universe	2
3	6	Mon Sep 19	Chapter 2 continued (Note: last day to add course)	2
	7	Wed Sep 21	Chapter 2 continued	2
	8	Fri Sep 23	Chapter 2 continued	2
4	9	Mon Sep 26	HW#1 Due; The Science of Astronomy	3
	10	Wed Sep 28	Chapter 3 continued	3
	11	Fri Sep 30	Chapter 3 continued	3
5		Mon Oct 3	EXAM #1	1-3
	12	Wed Oct 5	Making Sense of the Universe	4
	13	Fri Oct 7	Chapter 4 continued	4

6		Mon Oct 10	NO CLASS	-
	14	Tue Oct 11	Chapter 4 continued	4
	15	Wed Oct 12	Light and Matter (Note: last day to drop course)	5
	16	Fri Oct 14	Chapter 5 continued	5
7	17	Mon Oct 17	HW#2 Due; Chapter 5 continued	5
	18	Wed Oct 19	Telescopes	6
	19	Fri Oct 21	Chapter 6 continued	6
8		Mon Oct 24	EXAM #2	4-6
	20	Wed Oct 26	Our Planetary System	7
	21	Fri Oct 28	Chapter 7 continued	7
9	22	Mon Oct 31	Chapter 7 continued	7
	23	Wed Nov 2	Formation of the Solar System	8
	24	Fri Nov 4	Chapter 8 continued	8
10	25	Mon Nov 7	HW#3 Due; Chapter 8 continued	8
	26	Wed Nov 9	Jovian Planet Systems	11
	27	Fri Nov 11	Chapter 11 continued	11
11		Mon Nov 14	EXAM #3	7-8, 11
	28	Wed Nov 16	Asteroids, Comets...	12
	29	Fri Nov 18	Chapter 12 continued	12
12	30	Mon Nov 21	Chapter 12 continued	12
		Wed Nov 23	NO CLASS	-
		Fri Nov 25	NO CLASS	-
13	31	Mon Nov 28	Other Planetary Systems	13
	32	Wed Nov 30	Chapter 13 continued	13
	33	Fri Dec 2	Chapter 13 continued	13
14	34	Mon Dec 5	HW#4 Due; Our Star	14
	35	Wed Dec 7	Chapter 14 continued	14
	36	Fri Dec 9	Chapter 14 continued	14
15	37	Mon Dec 12	Synthesis	-
		TBA	FINAL EXAM	12-14

Day labs

Day labs meet in CAS 521 starting on Sep 13 and ending on Dec 9.

A2 Fridays 12:30-2 pm (TF: Taylor Morris)

A3 Tuesdays 11-12:30 pm (TF: Aurora Kesseli)

A4 Thursdays 12:30-2 pm (TF: Taylor Morris)

A5 Thursdays 2-3:30 pm (TF: Aurora Kesseli)

A6 Wednesdays 3:30-5 pm (TF: Aurora Kesseli)

A7 Mondays 1:30-3 pm (TF: Taylor Morris)

The labs you will do are the following:

Skygazer-Orrery, Sept 13 – 26

Gravity, Sept 27 – Oct 11

Spectroscopy, Oct 12 – 25

Reflectance, Oct 26 – Nov 8

Cratering, Nov 9 – Nov 21

Extrasolar planets, Nov 28 – Dec 9

More information about the day labs will be available in the sections.

Night labs

Night Lab #1 (N1) Motions in the Sky

Sept 12 to Oct 27 Mondays, Tuesdays, Thursdays at 8:30pm

Night Lab #2 (N2) What's the Name of that Star

Nov 1 to Dec 8 Mondays, Tuesdays, Thursdays at 8:30pm

Planetarium Visit

Sept 28 and Sept 29 at 6:30pm at the Museum of Science