

## **AS 101: The Solar System (Spring 2017) Course Syllabus**

### **Instructor:**

Professor Wen Li

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Office hours: Mondays 3:30–5:00 pm, Wednesdays 3:30–5:00 pm, or by appointment

### **Teaching Fellows:**

Luisa Capannolo ([luisacap@bu.edu](mailto:luisacap@bu.edu))

Office hours: Mondays 2:15–3:45 pm, Thursdays 2:15–3:45 pm in CAS 412

Benjamin Roulston ([roulstbr@bu.edu](mailto:roulstbr@bu.edu))

Office hours: Tuesdays 2:00–3:00 pm, Thursdays 11:00 am–1:00 pm in CAS 524

### **Lecture Meeting Time and Location:**

Mondays, Wednesdays, and Fridays at 11:15 am–12:05 pm in CAS 313

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 Eighth Edition of “The Cosmic Perspective: The Solar System” & Modified MasteringAstronomy by Bennett, Donahue, Schneider, and Voit published by Pearson. MasteringAstronomy is an online package accessible through Blackboard using a code provided with your book. You have two options as listed below. MasteringAstronomy is required for the course.

#### **1. ISBN-9780134583143**

This package contains:

- The Cosmic Perspective: The Solar System, 8th Edition  
Bennett, Donahue, Schneider & Voit
- Modified MasteringAstronomy with Pearson eText -- ValuePack Access Card -- for The Cosmic Perspective, 8th Edition  
Bennett, Donahue, Schneider & Voit

## 2. ISBN-9780134073835

This contains standalone Modified MasteringAstronomy with Pearson eText -- ValuePack Access Card -- for The Cosmic Perspective, 8th Edition

### **Website:**

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

### **Grading:**

20%	Homework
30%	In-class midterm exams
25%	Final exam
5%	Participation
20%	Lab exercises

Note that if a student misses 3 day labs or both night labs they will not receive credit for the course (a “D” or “F” letter grade, or a “W” if withdrawn), regardless of other work. This policy is to ensure that students complete the laboratory component of the course, required for CAS divisional studies requirement. All requests for grading corrections and changes need to be made in writing.

### **Homework:**

Homework is partially done online via MasteringAstronomy, accessible through Blackboard. On Blackboard click “Tools”, then “Pearson's MyLab & Mastering.” You will have to setup your account following the instructions.

When your account is set up, you will access the assignments by clicking “Tools” then “Pearson's MyLab & Mastering”, then “Mastering Assignments.” Assignments are due by the specified due dates. Late homework will receive no credit.

Mastering provides hints for the questions if requested, and gives you multiple opportunities to answer the questions if you answer incorrectly. However, bonus credit is given if you answer the questions without using the hints, and credit is reduced significantly for every time you answer incorrectly. **Maximum credit is given if you answer correctly the first time without requesting a hint.** The first assignment is a tutorial for how to use MasteringAstronomy.

### **Exams:**

There will be three in-class midterm exams (only the best of two midterms count) and one final exam. If you need to miss an exam for any reason, that will be the exam that you drop as your

lowest score. There will be no make-up exams. You cannot miss the final exam and there are no opportunities to take it at a different time.

The final exam will take place Wednesday May 12<sup>th</sup>, 2017, from 12:30 to 2:30 pm in CAS 313.

**Attendance:**

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.

**Late Policy:**

Under normal circumstances, the policies on late work are as follows: Late homeworks will not be accepted. If your lab reports are late, they will have 25% of the maximum possible score deducted for each day past the due date. The exams must be taken at the scheduled times.

**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/](http://www.bu.edu/academics/resources/academic-conduct-code/)). Cases of suspected academic misconduct will be referred to the Dean's Office.

**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:**

Day labs take place in CAS 521 lead by your TF each week. The laboratory component is required for the course, so students must be enrolled in either A2 through A8 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 25% 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). We will drop the two lowest day lab grades at the end of the semester. However, because the laboratory is a significant part

of the course, if you miss 3 or more day labs you will not receive credit for the course. The day lab schedule can be found below. Labs must be printed out and brought to lab.

**Night Labs:**

In addition to the Day Labs, students are required to complete two night labs over the course of the semester. The Department of Astronomy’s J. B. Coit Observatory is located on the roof of the CAS building. Nights labs will be done here on Monday Tuesday and Thursday nights over the semester, provided the night is clear. There are two night labs. Each of the two labs should take about an hour to complete. 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. If you miss one of the two observing sessions because the last two weeks are cloudy, no make-up will be possible. If you miss both, you will not receive credit for the course. 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 Apr 26). All night labs done after Apr 26 are due at the beginning of the last lecture (May 3). Late night lab reports will have 25% of the maximum possible score deducted for each day they are overdue. Lab reports will not be accepted after May 3. The night lab schedule can be found below. Labs must be printed out and brought to lab.

The first night lab, “Motions in the Sky” will be available Monday January 24 through Thursday March 16. The second night lab “Name That Star” will be available Monday March 20 through Monday May 1. If you do not complete the lab within those dates, no make ups will be available.

Lab Manuals: <http://www.bu.edu/astronomy/undergraduate/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.

**Class Schedule (subject to change):**

*Lectures*

Week	Date	Lecture	Reading Assignment
1	Fri Jan 20	Welcome, Intro	Syllabus
2	Mon Jan 23	A Modern View of the Universe 1	Ch. 1
	Wed Jan 25	A Modern View of the Universe 2; <b>HW#1 Due</b>	Ch. 1
	Fri Jan 27	A Modern View of the Universe 3	Ch. 1
3	Mon Jan 30	Discovering the Universe for Yourself 1; <b>HW#2 Due</b>	Ch. 2

	Wed Feb 1	Discovering the Universe for Yourself 2	Ch. 2
	Fri Feb 3	Discovering the Universe for Yourself 3	Ch. 2
4	Mon Feb 6	The Science of Astronomy 1; <b>HW#3 Due</b>	Ch. 3
	Wed Feb 8	The Science of Astronomy 2	Ch. 3
	Fri Feb 10	The Science of Astronomy 3	Ch. 3
5	Mon Feb 13	<b>Exam #1</b> <b>HW #4 Due</b>	Ch. 1-3
	Wed Feb 15	Making Sense of the Universe 1	Ch. 4
	Fri Feb 17	Making Sense of the Universe 2	Ch. 4
6	Mon Feb 20	<b>Presidents' Day, No class</b>	
	<b>Tues Feb 21</b>	Making Sense of the Universe 3	Ch. 4
	Wed Feb 22	Light and Matter 1; <b>HW#5 Due</b>	Ch. 5
	Fri Feb 24	Light and Matter 2	Ch. 5
7	Mon Feb 27	Light and Matter 3	Ch. 5
	Wed Mar 1	Telescopes 1; <b>HW#6 Due</b>	Ch. 6
	Fri Mar 3	Telescopes 2	Ch. 6
	Mar 4-Mar 12	<b>Spring Recess</b>	
8	Mon Mar 13	<b>Exam #2</b> <b>HW#7 Due</b>	Ch. 4-6
	Wed Mar 15	Our Planetary System 1	Ch. 7
	Fri Mar 17	Our Planetary System 2	Ch. 7
9	Mon Mar 20	Our Planetary System 3	Ch. 7
	Wed Mar 22	Formation of the Solar System 1; <b>HW#8 Due</b>	Ch. 8
	Fri Mar 24	Formation of the Solar System 2	Ch. 8
10	Mon Mar 27	Formation of the Solar System 3	Ch. 8
	Wed Mar 29	Planetary Geology 1; <b>HW#9 Due</b>	Ch. 9
	Fri Mar 31	Planetary Geology 2	Ch. 9
11	Mon Apr 3	Planetary Atmosphere 1; <b>HW #10 Due</b>	Ch. 10
	Wed Apr 5	Planetary Atmosphere 2	Ch. 10
	Fri Apr 7	Planetary Atmosphere 3	Ch. 10
12	Mon Apr 10	<b>Exam #3</b> <b>HW #11 Due</b>	Ch. 7-10
	Wed Apr 12	Jovian Planet Systems 1	Ch. 11
	Fri Apr 14	Jovian Planet Systems 2	Ch. 11
13	Mon Apr 17	<b>Patriots' Day, No Class</b>	
	Wed Apr 19	Jovian Planet Systems 3	Ch. 11
	Fri Apr 21	Asteroids, Comets and Dwarf Planets 1; <b>HW #12 Due</b>	Ch. 12
14	Mon Apr 24	Asteroids, Comets and Dwarf Planets 2	Ch. 12

	Wed Apr 26	Other Planetary Systems 1; <b>HW#13 Due</b>	Ch. 13
	Fri Apr 28	Other Planetary Systems 2	Ch. 13
15	Mon May 1	Other Planetary Systems 3	Ch. 13
	Wed May 3	Review <b>HW#14 Due</b>	Ch. 1-13
	Fri May 12	<b>Final Exam, 12:30 to 2:30 pm in CAS 313</b>	Ch. 1-13

### *Day labs*

Day labs meet in CAS 521 starting on Jan 24 and ending on Apr 26.

- A2 Fridays 12:20-1:35 pm (TF: Luisa)
- A3 Tuesdays 3:30-4:45 pm (TF: Luisa)
- A4 Tuesdays 11:00 am-12:15 pm (TF: Ben)
- A5 Thursdays 12:30-1:45 pm (TF: Luisa)
- A6 Wednesdays 2:30-3:45 pm (TF: Ben)
- A7 Thursdays 11:00-12:15 pm (TF: Luisa)
- A8 Wednesdays 4:30-5:45 pm (TF: Ben)

The labs you will do are the following:

- Skygazer-Orrery, Jan 24 – Feb 3
- Gravity, Feb 6 – Feb 17
- Spectroscopy, Feb 21 – Mar 14
- Telescopes and Optics, Mar 15 – Mar 28
- Cratering, Mar 29 – Apr 11
- Extrasolar planets, Apr 12 – Apr 26

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

### *Night labs*

Night Lab #1 (N1) Motions in the Sky  
Jan 24 to Mar 16 Mondays, Tuesdays, Thursdays at 8:30pm

Night Lab #2 (N2) What's the Name of that Star  
Mar 20 to May 1 Mondays, Tuesdays, Thursdays at 8:30pm

### *Planetarium Visit*

Feb 8 and Feb 9 at 6:30 pm at the Museum of Science