

INTRODUCTORY ASTRONOMY I
ASTR 1010 – FALL 2018
MWF 9:00AM – 9:50AM – DUANE G1B20
WEBSITE: <https://canvas.colorado.edu>

INSTRUCTOR: Dr. Seth Hornstein (seth.hornstein@colorado.edu)

Office: Duane D317 (3rd Floor, three floors UP from our classroom) and SBO N125

Phone: (303) 492-5631 (Duane) or (303) 492-9105 (SBO office)

Office Hours: Duane D317: Tue 1-2, Wed 10-11;

SBO N125 : Thur 11-12;

or by appt.

TEACHING ASSISTANT: Andrea Carosso (andrea.carosso@colorado.edu)

Office: Duane Gamow Tower F329 (Duane Tower across from Ralphie statue)

Office Hours (in F329): Mon 4-5 and by appt. (email)

Astronomy Help Room (D142): Thur 4-5

COURSE DESCRIPTION: This course will examine principles of modern astronomy for non-science majors, summarizing our present knowledge about the Earth, moon, planets, other solar system objects, and even other solar systems. We will study the solar system to understand planetary processes, and come to appreciate Earth's place – and ours – in the universe. Classroom lectures and discussion are complemented with sessions at the Fiske Planetarium and labs at Sommers-Bausch Observatory (SBO) as well as nighttime sessions at the SBO telescopes to observe astronomical objects.

PREREQUISITES: No formal prerequisites, just a natural curiosity about what's out there. ASTR 1010 counts for the A&S General Education natural sciences distribution credit (w/ lab). Students who are planning to major in the sciences, or are considering the Astronomy/Astrophysics major/minor, are strongly encouraged to take ASTR 1030 (offered this semester) instead of ASTR 1010. Students may receive credit for only one of ASTR 1000, 1010, or 1030. If you are not interested in the lab component of ASTR 1010, you are encouraged to take ASTR 1000 instead.

The math required will include basic algebra, geometry, and scientific notation. To review basic math, go to <http://lasp.colorado.edu/~bagenal/MATH/main.html>.

LAB SECTIONS: There is a 2-hour weekly lab that accompanies this course that meets at the Sommers-Bausch Observatory. You must attend your registered lab. Your lowest lab score will be dropped. **These labs are not optional and you must receive a 55% or higher in the lab in order to pass the course.**

GRADING:

5% Written homework (lowest score dropped) (4%) + Public Lecture (1%)

10% Higher of: Clicker Score OR Average of all three in-class exams.

10% Online (MasteringAstronomy) homework (lowest score dropped)

25% Labs (55% or better in labs needed to pass the course)

30% Best *two out of three* in-class exams (15% each)

September 21, October 17, November 28

20% Comprehensive final exam (**Wednesday, December 19, 1:30-4:00pm**)

GRADE SCALE:

	88% = A	85% = A-
82% = B+	78% = B	75% = B-
72% = C+	68% = C	65% = C-
62% = D+	58% = D	55% = D-

REQUIRED TEXT:

The Cosmic Perspective, 8th Ed. by Bennett et al. (required). I will assign regular readings from this book. Recent previous editions (6th and 7th) are acceptable but it is your responsibility to make sure the material is the same as the assigned reading (some chapters have been rearranged as well as information on recent discoveries). However, since I believe \$190+ for a textbook is outrageous, I encourage you to make use of the e-text. You may purchase the text in an online only e-book version (~\$60-90) from MasteringAstronomy (linked within Canvas and it includes access to the homework site discussed in the next section.)

ASTR 1010 Laboratory Manual. Printed copy available only at the CU Bookstore (~\$20). Also available online at the following address:

<https://www.colorado.edu/sbo/aps-courses>

Whether you buy the manual or print your own, you must have your own copy for every lab.

MASTERING ASTRONOMY: An account on the online homework system of MasteringAstronomy (accessible through the Canvas) is also required for this class. (**You MUST go through Canvas to get to MasteringAstronomy. Do NOT go through MasteringAstronomy.com.**) New textbooks come with a free access code for the website. Access to the online material is also available for ~\$60 for those who purchased a used copy of the text. Even though you will access MasteringAstronomy through the Canvas course website, you will still need a paid account for the homework system. *Note: If you take ASTR 1200 or 1020 through our department, you will need access to MasteringAstronomy then too. Please consider that when deciding on the length of your Mastering subscription.*

EXAMS: There are no makeup exams for any reason (including excused absences). Many students will have to miss an exam during the semester, and I accommodate that by dropping your lowest score automatically. If you know ahead of time that you will miss more than one exam for a legitimate reason, contact Dr. Hornstein as soon as possible (at least two weeks before the exam). You will be allowed one sheet (both sides) of handwritten notes (8.5" x 11") for each exam (including the final).

HOMEWORK: Written homework is due at the *beginning* of class on the day it is scheduled due. Written homework turned in during or after class (but before the solutions are posted) will be considered late and will receive 50% credit. Once the solutions are posted late homework will not be accepted. Online homework is typically due by 11:59pm on the day it is scheduled due but you should check the online website to be sure. Partial credit (up to 50%) will be given to online homework submitted after this time. Online homework can be completed up until the start time of the final. Do not abandon online homework just because it is late. Some credit is better than none and you will be in a much better position for the exams.

ASTRONOMY HELP ROOM: The APS department has an astronomy help room staffed by graduate students from **3:00 – 6:00pm on Tues/Wed/Thurs in Duane D142**. You may attend the help room to receive help on homework, exam questions, or any aspect of the course. While not all volunteers will be intimately familiar with the exact questions for this class, they will all be able to help you get started. The lecture TA for this class will be staffing the help room for at least one hour a week so you may choose to go at that time for guaranteed help related to this class.

OBSERVING SESSIONS: On several evenings over the semester, the Sommers-Bausch Observatory is reserved for 1010 students to observe the night sky and use the telescopes. These are valuable opportunities and can replace up to THREE daytime lab grades. Each observing session should take no more than 1 hour. Your observing nights (and more details) will be announced in the lab sections.

CLICKERS: Each of you will need to purchase a wireless student response system (iClicker or iClicker+). Several times during each class I will ask questions to get you to think carefully about some of the concepts we have covered. Often I will have you talk to your neighbors after you answer on your own, so you can help each other figure out the correct answer.

Use of clickers:

- Improves your grade. When you discuss and debate with others your knowledge improves.
- Gives *YOU* immediate feedback regarding what you do and do not understand.
- Tells *ME* what the class does not understand.
- Greatly improves class participation

Class will usually start with a straightforward, clicker question from the assigned reading. Students generally report that the reading clicker questions are easy if they've done the reading but hard if they haven't. *Do your reading before class!!*

Your worst 5 days of clicker scores will be dropped. This will cover you if you are sick, have a family emergency, or need to miss class for *any* other reason (approved or unapproved). This will also cover technical problems with your clicker (if you are using a clicker from a previous semester, *replace your batteries now!*) Clickers will be graded as:

0 pts	No answer
1 pt	Wrong answer
2 pts	Right/valid answer

Not all clicker questions will be graded for right/wrong. In some cases, I want to know what you truly think without you worrying about being penalized for getting the question wrong. These questions will simply be given credit as 0 pts for no answer, 1 pt for any answer. I will do my best to make clear if a question is being graded as right/wrong or no/any answer.

You **must** register your clicker at iclicker (<http://iclicker.com>). Using someone else's clicker for them is a violation of the Honor Code and both you and the person whose clicker you are operating will receive a zero for the entire clicker portion of your grade (and be reported to the Honor Code Office.) Each day is worth less than 0.2% of your total grade. Is it really worth losing 10% of your grade for a measly 0.2%?

PUBLIC LECTURE REPORT: Attend a local public lecture on an astronomical topic (approved upcoming lectures will be announced in class and posted on Canvas). Write a two-page report (double-spaced) summarizing the talk in your own words (and using concepts *you* understand). Be sure your summary includes the major ideas of the talk and how it relates to our course (if applicable). One bonus point will be given if you ask the speaker a *relevant* question (either at the end of the talk during the question/answer period or privately after the conclusion of the talk) and give the speaker's response. If you hear of a lecture that might count but are unsure, please check with Dr. Hornstein first. Talk summaries are **due no later than two weeks after the talk**. Talk summaries **must** be submitted via dropbox on Canvas and will be analyzed using CU's plagiarism detection software. Talk summaries will be graded based on scientific accuracy as well as adherence to standard English grammar rules. A list of approved lectures will be posted on the course website.

PLANETARIUM: The class will meet in the Fiske Planetarium theater on several occasions (**Sep 7, Oct 5 & Nov 16**). On these days, please report directly to the Planetarium. *Please do not arrive late*, as that will interfere with other people's adaptation to the dark and you will not be admitted. Doors will be **closed and locked** 10 minutes after the scheduled class start time.

COURSE MATERIAL: The course covers (roughly) the material in Chapters 1-13 in *The Cosmic Perspective*. The topics are grouped as:

Perspective and General Astronomy	Chap 1-3
Motion, Energy, and Gravity	Chap 4
Light/Atoms	Chap 5
Our Solar System: Details and Formation	Chap 7-8
Planetary Geology & Atmospheres (Terrestrial Planets)	Chap 9-10
Jovian Planets (Gas Giants)	Chap 11
Extrasolar Planets	Chap 13

Reading will be assigned on a daily basis and can always be found on the last slide of the day's lecture notes and on Canvas. Below is an approximate schedule.

Week	Lab	Mon	Wed	Fri
1 (8/27)	CU Model Solar System	Ø	1.1, 1.2	1.3, 1.4
2 (9/3)	Sun & Moon	LABOR DAY	2.1	Ø (Meet @ Fiske)
3 (9/10)	Survivor Challenge	2.2	2.3	2.4
4 (9/17)	Exam1 Review	3.2	3.3, 3.4	Exam1
5 (9/24)	Kepler's Laws	3.5, 4.1	4.2, 4.3	4.4
6 (10/1)	Collisions	4.5	Math 4.3, 4.4, 4.5	7.1 (Meet @ Fiske)
7 (10/8)	Exam2 Review	7.2, 7.3, 8.1	8.2(through jov. planets)	8.2(rest)
8 (10/15)	Telescope Optics	8.3	Exam 2	9.1
9 (10/22)	Telescope Optics (cont)	9.2	9.3, 9.4	9.5, 9.6
10 (10/29)	Spectroscopy I	5.1	5.2	5.3
11 (11/5)	Spectroscopy II	5.4	10.1	10.1 (cont.)
12 (11/12)	Mass of Saturn	10.2, 10.3	10.4, 10.5	10.6 (Meet @ Fiske)
13 (11/19)	Ø	FALL BREAK		
14 (11/26)	The Seasons	Ø	Exam3	11.1
15 (12/3)	Extrasolar Planets	11.2, 11.3	12.3	13.1
16 (12/10)	Final Exam Review	13.2	13.3	13.4

COMMON COURTESY: For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regard to all course interactions. For example:

- Act as mature and responsible adults at all times.
- Show up to class on time, and be prepared to learn when class starts.
- Do not leave class early and **do not start packing up before class is over**.
- If you must arrive late or leave early, please sit near a rear exit.
- Do not sit in the balconies. Your participation is vital to your learning.
- **Please do not use cell phones in class** (this includes text messaging).
- **Laptop computers may only be used in the front three rows of one side of the classroom** (and may only be used for taking notes).

The policy of the Department of Astrophysical and Planetary Sciences is to ban any use of electronic devices (cellphones, tablets, laptops) in class except as an approved accommodation granted by Disability Services, or as explicitly authorized by the instructor.

If you follow these requests, I will practice common courtesy towards you: ending class on time and dealing with you as individuals and as adults.

CU HONOR CODE: All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the policy may include: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code (honor@colorado.edu); 303-492-5550). Students who are found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the [Honor Code Office website](#).

While everyone understands what the honor code means on quizzes and exams, there is often confusion on what it means for homework. Students are encouraged to work together on homework, but your write-ups and web submissions must be independent. Copying, whether by hand or cut-and-paste on your computer, constitutes cheating. The best way to ensure you understand the assigned material is to split off from the group when writing up or submitting your answers. Assignments that seem identical will receive split credit. If you copy text or other information from any source for any reason, you must also include a citation to that source. ***When in doubt about plagiarism, paraphrasing, quoting, or collaboration, consult with Dr. Hornstein.***

CLASSROOM BEHAVIOR: Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on [classroom behavior](#) and the [Student Code of Conduct](#).

STUDENTS WITH DISABILITIES: If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the [Disability Services website](#). Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition or injury, see [Temporary Medical Conditions](#) under the Students tab on the Disability Services website and discuss your needs with Dr. Hornstein.

RELIGIOUS OBSERVANCES: Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, please contact Dr. Hornstein in advance of the religious observation to make possible arrangements. See the [campus policy regarding religious observances](#) for full details.

EXTRACURRICULAR ACTIVITIES: Students formally affiliated with curricular and extracurricular University-related activities are required to communicate in writing with the instructor about potential conflicts within the first week of class or as soon as the student learns of a conflicting event. This deadline is established in order to provide students with time to change their course schedule if necessary. Instructors are not obligated to accommodate any potential conflicts, but may, at their own discretion, allow reasonable accommodations for these absences.

DISCRIMINATION & HARASSMENT: The University of Colorado Boulder (CU Boulder) is committed to fostering a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (including sexual assault, exploitation, harassment, dating or domestic violence, and stalking), discrimination, and harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or cureport@colorado.edu. Information about the OIEC, university policies, [anonymous reporting](#), and the campus resources can be found on the [OIEC website](#). Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

QUESTIONS & PROBLEMS: Please don't hesitate to get in touch with myself or the TA if you have questions about any aspect of the class, or if you start running into difficulties following the material or keeping up with assignments – remember, **we're here to help!**