

# Course Syllabus

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## Astro 1 Syllabus

Please [introduce yourself to me and to your classmates](#)

### Course Information

**Course Title:** ASTRONOMY 1, Sec 3: Astronomical Universe

**Location:** 010 Sparks Bldg.

**Times:** TuTh 9:05AM - 10:20AM

**Start Date:** Monday 09 Jan, 2018

**Course Credits:** 3

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Note: Syllabus will be updated as needed, especially toward the beginning of the semester. Please don't print in hardcopy, but check back here for current version.

*Last updated Feb 19: Homework deadline info corrected -- Wednesday nights, not Tuesday, and extra credit option added for starting HW early.*

### Contact Information

**Instructor:** Dr. Julia Kregenow (pronounced KREH-guh-now)

**Email:** [kregenow@psu.edu](mailto:kregenow@psu.edu) (<mailto:kregenow@psu.edu>)

**Office Phone:** 814-865-0145

**Office Address:** 409 Davey Lab

**Campus Mail:** 525 Davey Lab

**Emailing me:** I will endeavor to respond to every email within 24 hours. If you haven't received a response within 48 hours, please check your spam folder. If you still don't see a reply from me, something is probably amiss -- Please try a different way to contact me, e.g. phone, Canvas messaging, or piazza. I don't want to miss any messages!

**Emailing you:** I will occasionally email individuals in the class, or the whole class. Please check your email regularly to be sure you get the info I send out. By default, I will use your .psu email address. If you don't use this address, or prefer I use a different email address, just let me know.



## Office Hours

Office hours are held 5 days per week (M-F), with a total of >20 drop-in hours to choose from, and unlimited by-appointment hours -- something to suit every schedule! All times are Eastern US (EST/EDT). The following hours are valid from the first day of instruction to the last day of instruction, excluding University holidays. (Different hours will be announced for finals week.)

**Professor:** (starting in week 2)

- **Tuesdays** 12-1:00pm and 3-4pm drop-in (409 Davey), OR
- *anytime*, 24/7, by advance appointment
- please get in touch! I'd love to help

**LA Homework Party / Exam Review Session:** (starting in week 2)

- **Tuesdays 7-9pm, AND Wednesdays 5-7pm** drop-in, ~~432~~ **442** Davey
- you can do your entire assignment there, check workbook answers, review for an exam, or just pop in with a single question, your choice
- working with Learning Assistants is an express ticket to succeeding in this class
- give it a try; you won't be sorry

**general TA** drop-in office hours in 442 Davey: (starting in week 2)

- **Mondays** 11am-5pm
- **Tuesdays** 11am-5pm
- **Wednesdays** 11am-3pm
- **Thursdays** 1pm-7pm
- **Fridays** 11am-2pm

Which option should you pick? Hover your mouse over each option above *in blue* for more info.

<mailto:kregenow@psu.edu>

## About This Class

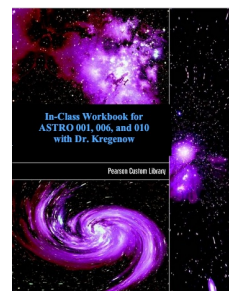
[Welcome Message \(click me\)](#)

### Required Text / Reading -- details

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In this class we have three resources that everyone needs to use. All will help you succeed in the course -- some to ensure that you master the concepts you learn in class, and others to let you know what to expect about how the course will run, and ensure you are aware of upcoming events, due dates, and instructions.

1. **Workbook** Pearson Custom Library In-Class Workbook for ASTRO 001 (and also Astro 006 and Astro 010) with Dr. Kregenow (see larger picture of cover [here](#)). \$31.00 new in PSU bookstore. Since this is a workbook for writing in, it must be purchased new. Every student needs their own copy. **Bring this book to class with you every day.** We will use it most days.

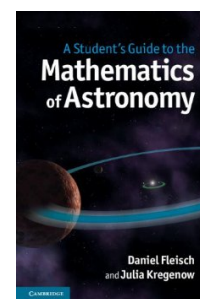
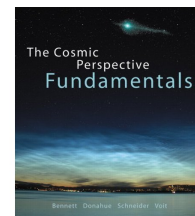


2. **Syllabus** This syllabus. It answers many questions that you might have. Even more questions are answered on the [FAQs](#) list. If you have a logistical question that is not answered here, please ask. The best place to ask it is on [piazzza](#), where I can answer it for everyone.
3. **Announcements** A few times a week, I post news, reminders, and other timely info on the [announcements](#) page. You will also see a list of upcoming assignment due dates toward the right side of the page when you log into our Canvas page. Make sure you read these each week to get important instructions to the class. I typically do not read announcements or due dates out loud to the class, so be sure to read them on your own. To help you stay current, I will display them on the big screen before each lecture begins, so it is a good idea to come to class a few minutes early and read the screen before class starts, and/or glance at them once or twice a week outside of class when you log into our course page, and scroll down to make sure you haven't missed any. Be sure to click on each announcement to expand it and read the full details. You may occasionally find extra credit opportunities offered here (and only here), so keeping up with announcements can directly benefit your grade.

## Suggested Text / Reading -- details

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- **Study Guide** The [Study Guide for whole semester](#) on Canvas furnishes questions on all testable topics for the course, roughly in the order the material is covered in class.
- **Astronomy Textbook** ([http://www.amazon.com/The-Cosmic-Perspective-Fundamentals-Edition/dp/0133889564/ref=dp\\_ob\\_title\\_bk](http://www.amazon.com/The-Cosmic-Perspective-Fundamentals-Edition/dp/0133889564/ref=dp_ob_title_bk)) [Cosmic Perspective Fundamentals](#) ([http://www.amazon.com/The-Cosmic-Perspective-Fundamentals-Edition/dp/0133889564/ref=dp\\_ob\\_title\\_bk](http://www.amazon.com/The-Cosmic-Perspective-Fundamentals-Edition/dp/0133889564/ref=dp_ob_title_bk)), by Bennett, Donahue, Schneider, and Voit. You may purchase your own copy in the bookstore, order one online from any vendor of your choice, buy access to an electronic version of the book (such as through [www.coursesmart.com](http://www.coursesmart.com) (<http://www.coursesmart.com/9780133889567>)), search for a copy in your local library or through interlibrary loan, or -- for students residing in State College -- use the \*free\* copy available on 2-hour reserve in the [Physical and Mathematical Sciences Library](#) (<http://www.libraries.psu.edu/psul/pams.html>).
- **Recommended Reading List** The [Recommended Reading](#) list on Canvas provides suggested brief reading assignments for each topic, both from the recommended textbooks listed here, plus a variety of free online sources.
- **Math Help** (<http://www.amazon.com/Students-Guide-Mathematics-Astronomy/dp/1107610214>) [A Student's Guide to the Mathematics of Astronomy](#) (<http://www.amazon.com/Students-Guide-Mathematics-Astronomy/dp/1107610214>), by Fleisch and Kregenow, gives step-by-step help with all the math we will be doing this semester (and much more). You may purchase your own copy, or use the \*free\* copy available on 2-hour reserve in the [Physical and Mathematical Sciences Library](#) (<http://www.libraries.psu.edu/psul/pams.html>). I also have some spare copies in my office that I can loan out if you'd like to use the book at home but are having trouble accessing your own copy.



## Goals

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My overarching goals for this course are for you to:

- \* think in the big picture, pondering your own place in the Universe
- \* distinguish how science is different from other intellectual pursuits
- \* acquire enough familiarity with the tools and terminology of astronomy that you could follow future astronomy articles in the popular news media if you so desired
- \* apply math and quantitative reasoning where appropriate to solve problems

Toward this end, I aim to empower you, while serving as your astronomical sherpa on your journey to explore the universe and stretch your mind.

## Learning Objectives

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Here are some of the central ideas in Astronomy that you will master as part of this course:

- how light works, and how we get information from it
- how gravity governs the motions of objects
- relative sizes and spacing of objects on scales from our home planet up to the entire Universe
- the life cycle of stars, including our Sun
- how galaxies behave, evolve, and interact
- evidence that the Big Bang happened, and what it was like
- suitable environments for life to exist in the Universe

## Tentative Schedule

Midterm Exam 1: Thu Feb 1, in class

Midterm Exam 2: Thu Mar 15, in class

Midterm Exam 3: Thu Apr 19, in class

Final Exam: day & time TBD by registrar, but it will fall sometime during finals week, Apr 30 - May 4, 2018.

Schedule will be updated on the course announcements when the date is announced by registrar, so please check there in October...

## Course Requirements

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### I. Weekly Homework

These are designed to strengthen your understanding of topics developed in class and to help you prepare for exams. Homework assignments will be posted approximately once per week, for a total of 13 assignments over the course of the semester, with your top 10 HW scores being counted toward your overall course grade. Your lowest 3 scores will be automatically dropped. All homework assignments are given online, using our Canvas page. Assignments will be announced on the Canvas page at least 5 days before their due date. Due dates are typically Wednesday nights at 11:55pm. You will get two attempts on each assignment, and only your higher score is counted. Please start early in order to maximize your learning by allowing you time to ask questions. As an incentive to start early, 4% of extra credit on each homework will be awarded to all students who submit their first attempt by Sunday night midnight before the deadline -- three days early. These bonus points will be added to the higher score of your two attempts, even if it puts your score above 100%. Another good reason to start your HW early is because computer glitches are not a valid excuse for missing deadlines, so waiting until the last moment is risky for you. If you miss a homework deadline, do not panic. Since only about three-quarters of the multiple choice assignment grades are included in your grade calculation (your best 10 out of 13), so you can safely miss a few deadlines with no adverse effect on your grade.

### II. Out-of-Class Activities

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This class includes several required out-of-class activities, described below. These are a substantial fraction of your grade, so make sure you get them done on time and well. The topics covered in the activities will mostly be different from those covered in class -- the purpose is to learn something new! -- so please don't hesitate to ask clarifying questions if there is anything you don't understand. You will have at least a three-week window in which you can complete each activity. Please start early, to avoid the risks of procrastination, e.g. If you put it off until the end of the activity period and then get legitimately ill, you will unfortunately miss the activity. Individual makeups or alternative assignments are not possible for these group activities, so please be sure to complete your activity during the scheduled period.

(A) Telescope Observing Activity. Since you're in an astronomy class, we want to give you the chance to look through a real live telescope with your real live eyes! Show up any available night, M-Th, Jan 16 - Apr 12, on the 6th floor roof of Davey Lab. If the sky is not clear, the planetarium in 541A Davey will be used to simulate the night sky instead of the actual telescopes. There will be signs in the front lobby to direct you to the correct location for that evening. If you are curious whether the telescope or planetarium will be used on a given night, you can check the observing status webpage before you head out at [www.astro.psu.edu/academics/telescope-status](http://www.astro.psu.edu/academics/telescope-status) (<http://www.astro.psu.edu/academics/telescope-status>), or get twitter updates about when the telescopes are open by following [@PSUObservatory](https://twitter.com/PSUObservatory) (<http://twitter.com/psuobservatory>).

Due Date: Every few weeks, the amount of credit for the activity drops, so it is to your advantage to do it early if you want a good grade.

**Jan 16 - Feb 22:** up to FULL CREDIT (plus 5% extra credit if you do it by Jan 25).

Feb 26 - Mar 22: up to 90% credit (10% deduction)

Mar 26 - Apr 12: up to 75% credit (25% deduction).

Read the full details about this activity here: [Spring 2018 Instructions](#) ([☐](#)).

(B) Project. You will use real astronomical data, freely available on the web from an approved website, to make and record observations about our universe. Collecting your observations will be done individually. (**Due date: Mon Apr 2**) Then, you will get together in groups of 4-5, randomly assigned by the instructor, to summarize and analyze your results in a project writeup to be done by your whole group. (**Due date: Tue Apr 24**) Full instructions will be given in class and online after exam 2.


### III. Participation & Engagement

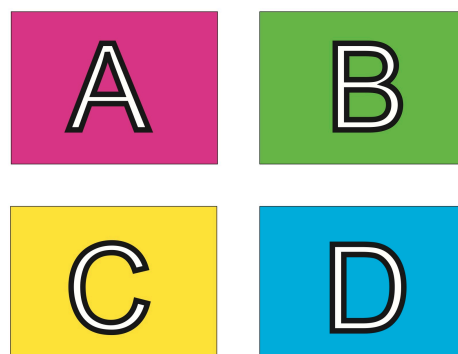
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Research has shown that you can only learn a limited amount from lectures alone, no matter how clear or entertaining. People learn much more from being actively engaged and grappling with the material while learning it. Therefore, active participation and collaboration is an integral part of your learning in this course. Participation includes doing in-class activities and worksheets, answering in-class questions each day via multiple-choice voting cards, and discussing your answers with the students sitting around you when asked. In addition to helping you learn, these participation activities provide vital feedback to me about how the class is going, and what everybody is understanding so I can adjust instruction accordingly in real time.

Items to bring to class *every day*:

- your in-class activities workbook (described above under "Required Text"),
- voting card (described below),
- a pen or pencil, and
- note-taking material -- preferably a paper notebook, if possible.


**Voting Cards:** A multiple choice voting card will be provided to each student at the beginning of the semester. If you forget yours one day, please ask the instructor before class for a spare "loaner" card for the day -- and please return it after class to ensure that there will always be loaners available for others. A PDF **COLOR** copy of this card is [available for download](#)  so if you lose your card permanently, please print another copy **IN COLOR** for yourself. While your responses are not recorded or graded for correctness, it is to your (any my) great advantage to try to answer each question to the best of your ability. The responses provide both the students and the instructor with valuable feedback about what the class is understanding.



**Electronics Use Policy:** Research has shown that using an electronic device with a screen during class distracts other students around you and hinders their learning\*\*. To eliminate the screen distraction "halo" effect on neighbors, we will have two different zones in the classroom to accommodate both those who want the freedom to use electronics, and those who wish to avoid distraction from electronics:

- Students who would like to be guaranteed a "screen free" environment should sit in the LEFT half of the classroom (as you are facing the front). Students sitting in this area have committed to not using any electronic devices with a screen, of any size (laptop, phone, tablet, iPod, etc.) for the duration of the class period. It is fine to use your devices before class starts or during an announced break, but students in this zone have agreed to put them entirely away during the actual class time.
- Students who will (or might) be using any electronic devices that have any kind of a screen, or who don't mind seeing others use such devices, should sit on the RIGHT half of the room. This applies regardless of the reason the student is using the device, whether it is class-related or not -- even if it is a legitimate educational reason or an extenuating personal circumstance (e.g. laptop for notetaking, or checking texts for family emergency). This also applies regardless of the frequency and duration of the electronics use (e.g. glancing at just one text message or actively taking notes all throughout class).

Students are free to change which zone they elect to sit in on any given day, depending on their personal circumstances and preferences on that day.

**Flipd:** Free points for staying off your phone. To provide extra credit grade incentive for remaining phone-free during lecture, we will be using a free app called Flipd (<https://www.flipdapp.co/> ) (<https://www.flipdapp.co/>) in class. Flipd is an app that tracks when you are not on your phone during class. The goal is to reduce digital distraction to help you and your peers stay focused and on-task, which in

turn will help your learning. Downloading, registering, and using Flipd is optional. For those who choose to use it, Flipd will be worth up to 2% on top of your course grade. You are responsible for using the Flipd app in every class to earn these points. You will get a reminder on your phone just before each lecture reminding you to "Flip Off" during the class period. (Note: This is not the same as airplane mode on your phone; even while "Flipd Off", you can still receive an emergency phone call or text if needed.) Flipd sends me a full summary of your participation for each class, so if you've been "Flipd Off" for the whole class you will earn all the credit for that day. If you use Flipd for all of every single class period this semester, you will get the full 2% extra credit added on top of your course grade at the end of the semester. Your points will be scaled proportionally to how consistently you use it: If you use Flipd in half of the lectures, you will get half of the 2%, etc.

Download instructions: From your phone, visit the Play Store or the App Store and search for "Flipd stay focused" and install it for FREE. I have already paid for a premium license for everyone in the class, so you should not have to pay anything to download or use it. Sign into the Flipd app with either your email address, Google, or Facebook account. Once logged in you must join our class by entering the Group Code below. This code identifies our class. You must join the class to earn the points. Note: The specific code for our class is: **80152** (class name: Astro 1 Sec 3 Spring '18 with Dr. K). If you do not have a smartphone, but would still like to take advantage of this bonus points opportunity, contact your instructor outside of class to discuss options.

Information about your privacy in Flipd can be found on this page: <http://www.flipdapp.co/terms-privacy/> (📄) (<http://www.flipdapp.co/terms-privacy/>)

FAQ: Visit the Flipd Knowledge Base for FAQs or to chat with a real support person: <http://help.team.flipdapp.co/support/home> (📄) (<http://help.team.flipdapp.co/support/home>)

Should you require additional assistance with Flipd at any time, please email their Support Team directly (not your instructor!) at [info@flipdapp.co](mailto:info@flipdapp.co) and be ready to provide your email address linked to the account, full name, and Group code above.

*\*\*Note: Any kind of multitasking, including but not limited to electronics use, also hinders your own learning. So those wishing to optimize your own learning may want to consider ways to keep any kind of off-task personal distraction to a minimum during class and while studying. For a little background on this policy, please see my explanation of [multitasking and mental brownout](#).*

## IV. Participation Points

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Participation points may be earned (A) in class, (B) out of class, or both, as you prefer. In the final grade calculation, your lowest 12 scores will be automatically dropped, out of at least 24 opportunities. These opportunities will be roughly evenly split between (A) in class and (B) out of class. To allow you flexibility and choice, you can earn full participation credit for the semester by doing all of only one or the other, or picking and choosing some of both. However, you are strongly encouraged to try to do all of both, because both will help you learn and get more out of the class. To encourage and reward students for doing both, everyone



who completes ALL of the participation opportunities from all categories below (expected to be approximately 24-30 in total) will earn an extra 2% extra credit on top of their course grade.

**(A) In Class Participation Points:** There will be approximately 10-15 opportunities to earn in-class participation points throughout the semester. These will be unannounced and randomly scattered.

1. **Minute Papers:** Sometimes during class, the whole class will write and turn in a very short writing assignment on a question or topic chosen by the instructor. Everyone who is present will be asked to do it, and everyone who does will earn participation points for that day. Sometimes these will be at the very beginning of class, sometimes in the middle, and sometimes at the very end. So please arrive to class on time and stay until the end.
2. **Names from Hat:** Periodically during class I will draw individual names randomly from a hat to answer questions (typically after deliberation with your neighbors, so you are actually speaking for several people around you), help with demos, or collect workbooks. Most names in the hat will get drawn at least once during the course of the semester, or possibly more. (Note: If it is a very large class, >250 students, we might not get to all the names.) Responding when your name is called earns participation points, the same way that submitting a minute paper does. All students will be given the option at the beginning of the semester of whether or not they would like their name to be included in the hat for the option of earning participation points this way. I request that only students who are planning to attend every class session (or very nearly so) put their names in the hat, so that I don't have to waste the class's time reading through names of students who are not present. If you wish to have your name in the hat, but suspect that you will have undue anxiety about responding aloud, please see the instructor privately in advance to discuss alternative, non-speaking options for in-class participation. If you initially decide at the beginning of the semester that you do not want your name in the hat, but change your mind later and want your name added, just let me know.

**(B) Out of Class Participation Points:** There will be approximately 13 optional online Discussion Board Assignments posted on Canvas, spaced evenly throughout the semester. These will be offered approximately once per week in conjunction with the weekly multiple choice HW assignments. The due dates are Tuesday nights, the same as the online weekly multiple choice homework assignments (required). Each discussion board assignment you complete conscientiously will count for participation points, equal to filling out a minute paper or answering when your name is drawn from the hat, described above.

## V. Course Etiquette

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In order to create a harmonious and orderly class environment that is respectful to all and conducive to learning, especially in a large lecture classroom, we all need to act with extra consideration. The following guidelines will help us to maintain a favorable learning environment for all. Please see the instructor privately if you have any schedule constraints (e.g. a previous class far across campus) or any other personal circumstances or concerns that you think might make it difficult for you to adhere to any of these:

\*You will arrive on time.

\*You will stay to the end of class (not leave early).

\*You will respond when called upon so the professor doesn't have to waste the class's time calling multiple

names.

- \*You will refrain from talking during class except as part of an activity -- large lecture halls are designed to amplify small sounds, so even whispering can be disruptive.
- \*You will wait to begin packing up your belongings until class is over to avoid the resulting disruptive noise and distracting movement.
- \*You will keep your phone set to vibrate, silent, or off for the duration of class.
- \*You will heed the electronics use policy described above.

IN RETURN, THE PROFESSOR AGREES TO:

- \*I will start and end class on time. This is respectful of your time.
- \*I will break up periods of lecture with other activities and/or occasional breaks to make it easier to stay attentive and alert.
- \*I will incorporate lots of pictures, movies, demos, and other multimedia where appropriate to help you visualize the material, and to try to make class more interesting and fun.
- \*I will give you frequent opportunities to discuss concepts with each other. This helps you keep track of, and indeed increases, your own learning.
- \*I will ask you questions in class that are designed to help improve your understanding of the material.
- \*I will provide a welcoming environment for you to ask questions both in and outside of class.
- \*I will display the course announcements on the projector before class each day (though I often won't talk about them; you can read them on your own), which will include reminders about upcoming due dates.
- \*Outside of class, I will respond to every email. If you don't get a response within 48 hours, please see me so we can track down why.

## Other Course Information

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## Course Prerequisites

No astronomy background is needed, or assumed! (Students with a strong science or math background, in particular prior familiarity with physics and/or astronomy, may find some of the technical aspects of the course to be a review.) Note that since this course has a quantitative component, we will naturally be using some math in this course -- nothing beyond high-school algebra though. Here are some examples of math we will be doing without a calculator (we will review and practice all of these in the first two weeks):

- \* Scientific notation
- \* Multiply and Divide powers of 10
- \* Convert units (e.g. How many inches in a mile? Convert miles to inches.)
- \* Rearrange an equation to solve for another variable (e.g.  $y=mx+b$ . Solve for  $x$ .)
- \* Plug numbers in for variables in an equation and calculate the result including the correct physical units
- \* Calculate a scale model, converting between real and scaled-down (map scale) sizes
- \* Read and interpret axes of a graph

(Note: no calculators allowed on exams)

If you're rusty, don't worry, we are here to help. Please DO COME GET HELP from the TAs or the professor

in office hours.

Note: If you have already taken and passed (or are currently taking) Astro 005, 006, or 010, you should not be in this class. Please contact the instructor ASAP to discuss options.

## Grading Policy

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Calculation of Grade:

35% Midterm Exams (drop lowest; best 2 out of 3 individual scores counted)

25% Final Exam

15% Weekly Multiple Choice HW assignments (best 10 scores counted)

13% Participation (responding in class and/or online discussion board assignments, your choice)

10% Out-of-class Activities (3% observing activity and 7% group project)

2% Surveys

Grading Scale: I use your exact percentage according to what you earned. Grades are not rounded -- for details on why, please see the course [FAQs](#).

A (>93.0%), A- (90.0-92.99%), B+ (87.0-89.99%), B (83.0-86.99%), B- (80.0-82.99%), C+ (77.0-79.99%), C (70.0-76.99%), D (60.0-69.99%), F (<60.0%)

## Attendance Policy

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If you attend class, you will learn more. If you participate actively, you will learn even more. This course is built around daily activities and questions to accompany the lecture, so I really hope you will choose to be there and engage. While attendance is not formally required, it is strongly encouraged. See the section above under "Participation Points" to see how attending class helps you earn points for Participation... and how perfect attendance can help you earn 2% extra credit!

I respectfully request that you kindly *do not email me to tell me if you have to miss class*; These emails can get overwhelming for the instructor in a large class. The emails are not necessary because participation points can be earned outside of class, protecting your participation grade even in the case of extended illness or family emergency. I trust you to decide when you can and can't be in class. If you do need to miss, do not worry -- there are steps you can take to catch up. Here is [what to do if you are sick or absent](#) (link opens in new window), including a handy checklist of how to catch up.

## Exam Policy

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All exams are closed book and closed notes. The exam will include a list of any needed equations or numbers, and scratch paper will be available. The exams are multiple choice, and you will be provided with a "scantron" bubble sheet. Please bring a photo ID to every exam, and a #2 pencil(s) and eraser for filling out your scantron form, and for scratch work if you wish. No calculators.

## Midterms

In this course section, there will be *three* scheduled midterm exams. (See schedule above for dates.) All midterm exams will be taken in our regular classroom during our regular class time on the dates listed above under [Tentative Schedule](#) (☐).

Your lowest midterm grade will be automatically dropped -- even if it is a zero. (You need not actually take the exam that is dropped, so you can safely miss one. However, you are strongly encouraged to take all three if at all possible -- This is best for your learning, and it also may provide a grade boost because it gives you one extra chance to do well and boost your grade.) Because of this policy, if you have to miss one exam unexpectedly for any reason, it will not have any effect on your course grade; the zero will be automatically dropped. Because you can miss any one midterm with no penalty, makeup exams are generally not given. There are two exceptions for which you can request a makeup:

(1) If you know in advance that you will have to miss a midterm exam for a university sponsored trip (e.g. athletics, research field work, class field trip) or religious observance, you may request a makeup midterm if you wish. Documentation will be required. Requests must be made in advance of the relevant exam. Please email the instructor to make your request as early in the semester as possible, to facilitate scheduling.

(2) If you are injured or ill during a midterm exam and it is not feasible for you to email the instructor prior to the exam, you may request a makeup within one week after the midterm. Medical documentation may be requested. Please email the instructor as soon as you are able to request the makeup.

Please bring all makeup request documentation to the professor's office hours. *If a makeup exam request is granted, the format of the exam will be at the instructor's discretion. Possible formats include (but are not limited to) short answer, essay, or oral exam.*

## Final Exam

The final exam will be during finals week — date TBD by registrar's office. You must be on campus for the exam and plan your travel accordingly. If your travel plans conflict with the final exam and cause you to miss the exam, you will get a zero. No makeup exam will be offered for the final exam, so please do not miss the final! If you have an official conflict with your other final exams as defined in the [PSU undergraduate handbook](#) (<http://handbook.psu.edu/content/examinations#conflict>), you may officially [request an alternate conflict exam time](#) (<http://undergrad.psu.edu/aappm/F-3-conflict-final-examination.html>) at the prescribed time through the registrar. Barring conflicts with other finals, there will be no opportunities to take the final exam at a different time. The final exam will be cumulative. The final exam grade may not be dropped.

## Group Exams

Each exam — midterms and final — will have both an individual and a group portion. The majority of your time (and your grade) will be devoted to the individual portion, which is taken first. Upon completion of the individual portion, students will be grouped into teams of 5 and escorted by a member of the teaching staff to a nearby meeting place for instructions on taking the group exam. Groups will discuss each question in turn and come to a consensus before answering as a group. Scores will be given immediately, and any wrong answers will be allowed a second chance (and third and fourth chance, if needed) for partial credit until all

questions are answered correctly. Grading: All members will receive the same (group) score for the group exam. The group exam will be substantially shorter: about one-sixth as many questions, so it will correspondingly be weighted approximately one-sixth as much as the individual exam in your grade calculation. Note: Group exam scores are nearly always higher than individual exam scores, since five brains are better than one. Group exams are intended to help your learning, with a side benefit of boosting your grade. However, in the rare event that your group score on a particular exam ends up lower than your individual score on that same exam, your group score will be replaced with your individual score. So the group score cannot hurt your grade; it can only help. Because the group exams must be taken with other students immediately upon completion of the individual exam, makeups are typically not possible. If you must unavoidably miss one individual midterm exam and therefore miss the corresponding group exam, that individual exam score (0) will be automatically dropped, and that group exam score will be omitted from your average.

## Academic Integrity

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Please see the [personal letter from Dr. Kregenow](#) for an explanation of how practicing academic integrity now will help you build an honest life. Meanwhile, here is a brief summary of how it applies to this class:

I am passionate about academic integrity, because it is a foundation for building integrity in all aspects of our adult lives. Academic integrity is much more than "don't cheat", though that is certainly part of it.

Here are some reasons why academic integrity is so important<sup>1</sup>:

- cheating in school leads to more cheating and lying later in life, in all contexts
- ethical decision making takes a great deal of practice, and college is the best time to practice
- cheating is contagious
- you'll be happier and more committed if our class is cheat-free
- you'll learn more

My promises to you: I will make the material as interesting and engaging as possible, and to find ways to make it relevant and connect it to your life -- even though your major is probably very far from astronomy. Personal investment and interest in a topic makes it easier to approach tasks honestly. I will provide a wide variety of help resources to allow everyone to succeed honestly in the class without need to resort to cheating. From time to time I may offer the class opportunities to practice thinking through hypothetical ethical dilemmas, brainstorm possible courses of action, and discuss potential barriers to action. This practice will make it easier to deal with real ethical dilemmas that will inevitably arise later in life in other settings. If there is sufficient interest from the class, we may also discuss practical steps you can take to minimize the chances that you will end up in bad situations where you are likely to face an academic integrity dilemma.

Examples: Here are some specific examples (though not a complete list) to help clarify how to honestly approach this class. **Honest behavior**: Discuss concepts and ideas with the professor, TAs, and other students in the class. Talking *about* course concepts and homework questions with others is a great way to

help one another learn. But be sure to write up any work and select / submit answers on your own. Be sure you can explain everything in your own words. All work submitted by you should be an honest reflection of what you yourself personally know, understand, and can do without assistance. **Dishonest behavior:** Any action whereby a student fails to do all the assigned work on their own. This includes, but is not limited to: Relying on the written work of anyone else. Getting answers from any other source other than your own thinking. Using unauthorized sources of information for tests. Obtaining test questions in advance. Having someone else take your test or complete work on your behalf. Submitting a minute paper under somebody else's name. Submitting more than one minute paper. Falsifying or exaggerating an excuse for late or missed work. Misrepresenting any information to the instructor.

The tests in this class are closed notes, closed book, closed electronics, and closed web. Written work that you submit for this class may be analyzed with plagiarism detection software, so be sure that any writing you do for this course, no matter how short or long, is completely in your own words except where otherwise cited. Plagiarism is one of the most frequently committed violations of academic integrity in college classes. Warning: Ignorance is not a valid defense for plagiarism. Educate yourself about what constitutes plagiarism so you don't get burned. See [tlt.its.psu.edu/plagiarism](http://tlt.its.psu.edu/plagiarism) (<http://tlt.its.psu.edu/plagiarism>) for resources to help you avoid plagiarism. These, or any other instances of academic dishonesty will be pursued under University and Eberly College of Science regulations concerning academic integrity ([science.psu.edu/current-students/Integrity/Policy.html](http://science.psu.edu/current-students/Integrity/Policy.html) (<http://science.psu.edu/current-students/Integrity/Policy.html>)). See the undergraduate advising handbook at [handbook.psu.edu/content/academic-integrity](https://handbook.psu.edu/content/academic-integrity) (<https://handbook.psu.edu/content/academic-integrity>) and the faculty senate page at [senate.psu.edu/policies-and-rules-for-undergraduate-students/47-00-48-00-and-49-00-grades/#49-20](http://senate.psu.edu/policies-and-rules-for-undergraduate-students/47-00-48-00-and-49-00-grades/#49-20) (<http://senate.psu.edu/policies-and-rules-for-undergraduate-students/47-00-48-00-and-49-00-grades/#49-20>) for more information and links regarding Penn State's policies on academic integrity. In this class there will be no warnings, even on a first offense. Academic dishonesty can result in assignment of a course grade of "F" by the course instructor, or "XF" by Judicial Affairs as the final grade for the student. So please, pretty please, don't cheat.

I look forward to working together this semester to build a strong community of integrity!

(1) Bertram Gallant, Tricia, July 2014. "Creating the Ethical Classroom", Penn State Workshop

## Disability Policy

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Penn State welcomes students with disabilities into the University's educational programs. If you have a disability-related need for reasonable academic adjustments in this course, contact the Office of Student Disability Resources (SDR) by phone at 814-863-1807 (V/TTY), or online at [equity.psu.edu/student-disability-resources/forms/contact-ods-form](http://equity.psu.edu/student-disability-resources/forms/contact-ods-form) (<http://equity.psu.edu/student-disability-resources/forms/contact-ods-form>). For further information regarding SDR, please visit the Office of Student Disability Resources Web site at [equity.psu.edu/student-disability-resources/](http://equity.psu.edu/student-disability-resources/) (<http://equity.psu.edu/student-disability-resources/>).

In order to receive consideration for course accommodations, you must contact SDR and provide

documentation (see the documentation guidelines at [equity.psu.edu/student-disability-resources/guidelines](https://equity.psu.edu/student-disability-resources/guidelines) [\\_ \(https://equity.psu.edu/student-disability-resources/guidelines\)\\_](https://equity.psu.edu/student-disability-resources/guidelines)). If the documentation supports the need for academic adjustments, SDR will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact SDR and request academic adjustment letters at the beginning of each semester.

## Miscellaneous

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Once or twice during the semester, I'll invite members of the class to join me for breakfast or lunch on or near campus at a "Quality Circle" meeting in which we'll discuss your experience with the various aspects of the course: homework assignments, lecture, discussions, in-class and out-of-class activities, exams, piazza, Canvas, the reading, etc. The purpose of these sessions is to make the course better. I can accommodate up to about 12 students at each session, and in later sessions I'll give priority to those who were unable to attend previous meetings. If you're not able to make the meeting but would like to comment about any aspect of the course, send your thoughts to me before the meeting and I'll include them in the discussion. At the next class period following the meeting, I'll post an announcement on Canvas or take a few minutes to summarize the discussion and let the whole class know about any changes to the course resulting from our conversation.

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## Helping you succeed

The Eberly College of Science is committed to the academic success of students enrolled in the College's courses and undergraduate programs. Find links to help resources at [science.psu.edu/current-students/support-network/advising](https://science.psu.edu/current-students/support-network/advising) [\\_ \(https://science.psu.edu/current-students/support-network/advising\)](https://science.psu.edu/current-students/support-network/advising) and [science.psu.edu/current-students/support-network/learning-support](https://science.psu.edu/current-students/support-network/learning-support) [\\_ \(https://science.psu.edu/current-students/support-network/learning-support\)\\_](https://science.psu.edu/current-students/support-network/learning-support). Additionally, there are a multitude of resources available for help with this class in particular. See above under "Office Hours", "Recommended Text", and look at the list of [FAQs](#) for more details.

## Mutual respect and cooperation

"The Eberly College of Science Code of Mutual Respect and Cooperation" ([science.psu.edu/climate/code-of-mutual-respect-and-cooperation](https://science.psu.edu/climate/code-of-mutual-respect-and-cooperation) [\\_ \(http://science.psu.edu/climate/code-of-mutual-respect-and-cooperation\)\\_](http://science.psu.edu/climate/code-of-mutual-respect-and-cooperation)) embodies the values that we hope our faculty, staff, and students possess and will endorse to make The Eberly College of Science a place where every individual feels respected and valued, as well as challenged and rewarded.

## Copyright

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All course materials students receive or to which students have online access are protected by copyright laws. Students may use course materials and make copies for their own personal use as needed during the semester. Class materials should not be shared with anyone except for current

classmates in this course for the purposes of collaborative studying. Class materials (including digital files) should not be shared with any other persons, websites, or services at any time. Any unauthorized recording of lectures, copying, distribution and/or uploading of any course materials without the instructor's express permission is strictly prohibited. University Policy [AD 40](https://guru.psu.edu/policies/AD40.html) [\\_\(https://guru.psu.edu/policies/AD40.html\)\\_](https://guru.psu.edu/policies/AD40.html), the University Policy on Recording of Classroom Activities and Note-Taking Services addresses this issue. Students who engage in the unauthorized distribution of copyrighted materials may be held in violation of the University's Code of Conduct, and/or liable under Federal and State laws. If you have any concerns or questions about what is and is not allowed use of course materials, please ask.

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## Concerns or Suggestions?

Please talk directly to the instructor or any LA or TA, or if you prefer, consider submitting an [anonymous suggestion](#)




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Summary of assignments below is under construction, and will be updated as the semester progresses...



## Course Summary:

Date	Details	
Tue Jan 9, 2018	 <a href="https://psu.instructure.com/calendar?event_id=2929701&amp;include_contexts=course_1899303">lecture (https://psu.instructure.com/calendar?event_id=2929701&amp;include_contexts=course_1899303)</a>	9:05am to 10:20am
Thu Jan 11, 2018	 <a href="https://psu.instructure.com/calendar?event_id=2929702&amp;include_contexts=course_1899303">lecture (https://psu.instructure.com/calendar?event_id=2929702&amp;include_contexts=course_1899303)</a>	9:05am to 10:20am
	 <a href="https://psu.instructure.com/courses/1899303/assignments/9808233">Astronomy Class Survey (https://psu.instructure.com/courses/1899303/assignments/9808233)</a>	due by 9:05am