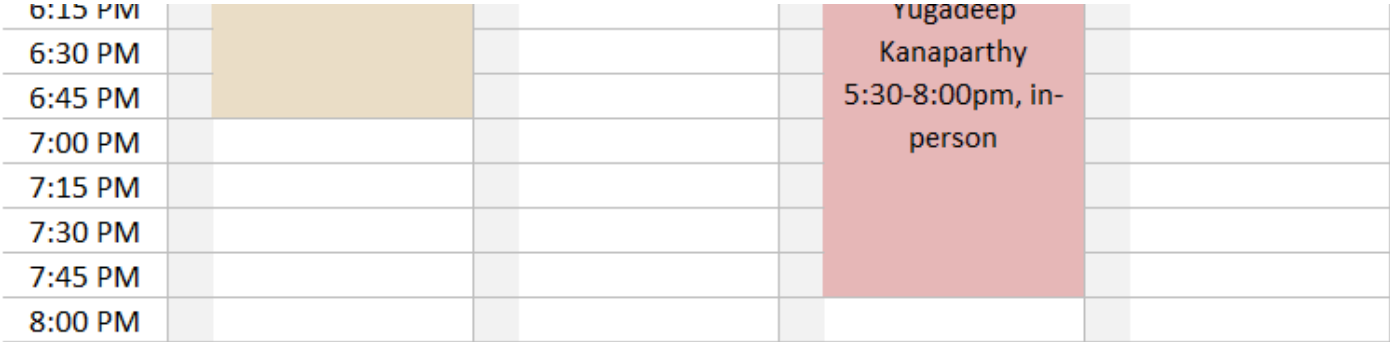
Course Syllabus

ASTR120 Syllabus (Fall 2022)

- Lectures are held Tuesdays & Thursdays from 11 am to 12:15 pm in CCC (https://maps.umd.edu/map/index.html?Welcome=False&MapView=Detailed&LocationType=Building&LocationName=097) 1205 (map). (https://www.google.com/maps/d/edit?mid=1eOgUVSkh1CZmTMkuj97O9W22x6RE9k8Q&usp=sharing)
- Discussion Section meetings are held in **ATL (https://maps.umd.edu/map/index.html?&zoom=19&feature=building&name=224&basemap=detailed)** 2428 (map (https://www.google.com/maps/d/edit?mid=1eOgUVSkh1CZmTMkuj97O9W22x6RE9k8Q&usp=sharing))
  - Section 0101 meets Fridays from 1:00 to 1:50 pm
  - Section 0102 meets Fridays from 2:00 to 2:50 pm
- The required textbook is the OpenStax Astronomy textbook, by Fraknoi, Morrison, and Wolff (https://openstax.org/details/books/astronomy) , available for free. See below for more information
- The instructor is Prof. **Stuart Vogel (http://www.astro.umd.edu/people/vogel.html)** :
  - Office: **PSC (http://maps.umd.edu/map/index.html?&Mode=Map&NoWelcome=True&logo=False&LocationType=Building&LocationName=415)** 1164 (map (https://www.google.com/maps/d/edit?mid=1eOgUVSkh1CZmTMkuj97O9W22x6RE9k8Q&usp=sharing))
  - Phone: 301-405-2134
  - Email: Canvas messenger is best - click on the **Inbox icon in the navigation column on the left** and compose a message. If you use your own e-mail program, I can be reached at **svogel@umd.edu (mailto:svogel@umd.edu;)** but you should include "ASTR120:" in the subject line.
  - Office hours: Tuesdays 1 pm - 2 pm (in person & Zoom (http://ter.ps/astr120t (http://ter.ps/astr120t)) & Wednesdays 2 pm - 3 pm (Zoom-ONLY http://ter.ps/astr120w (http://ter.ps/astr120w)), and by appointment. Click on Zoom in left sidebar.
  - Pronouns: he/his
- The teaching assistant (TA) for both sections is (https://www.astro.umd.edu/people/jwpark.html) : Jongwon Park
  - Office: PSC 1238
  - Email: **jwpark@astro.umd.edu (mailto:jwpark@astro.umd.edu)** ; Canvas messenger is best
  - Office hours: Wed & Fri 11:30-12:30pm or by appointment
  - The syllabus for the discussion section is available in the Discussion Section folder of files, or directly **at this link (https://umd.instructure.com/courses/1327665/files/69105365/download?download_frd=1)** .
  - Pronouns: he/him/his
- The grader for the course is Kenneth Arnold:

  - Email: **karnold2@umd.edu (mailto:karnold2@umd.edu;)**
  - Office: ATL 1243
  - Office hour: Mon 4-5 pm or by appointment
- Tutors (undergraduate majors) will be available for the course. Their schedule is

Time	Monday	Tuesday	Friday	Sunday
8:00 AM			Hannah Suresh 8:00-10:00am, on Zoom	
8:15 AM				
8:30 AM				
8:45 AM				
9:00 AM				
9:15 AM				
9:30 AM				
9:45 AM				
10:00 AM				
10:15 AM				
10:30 AM				
10:45 AM				
11:00 AM	Rohan Kane 11:00am-12:00pm; in-person			
11:15 AM		Julia Cottingham 11:15am-12:15pm; in-person		
11:30 AM				
11:45 AM				
12:00 PM				
12:15 PM				
12:30 PM				
12:45 PM	Raina Hatcher 12:45-1:45pm, in-person			
1:00 PM			Brooke Kaluzienski 1:00-2:00pm; in-person	
1:15 PM				
1:30 PM				
1:45 PM	Julia Cottingham 1:45-2:30; in-person			
2:00 PM				
2:15 PM				
2:30 PM				
2:45 PM				
3:00 PM	Fred Garcia 3:00-4:00pm, in-person			
3:15 PM				
3:30 PM			Rohan Kane 3:30-5:30pm; in-person	
3:45 PM				
4:00 PM				
4:15 PM				
4:30 PM				
4:45 PM				
5:00 PM	Brooke Kaluzienski 5:00-7:00pm; in-person	Tobi H 5:00-6:00pm, in-person		Siobhan Light 5:00pm-6:00pm; Zoom
5:15 PM				
5:30 PM				
5:45 PM				
6:00 PM				



Tutors can be found in the ASTR major interaction room, ASTR 1220 (see map (https://www.google.com/maps/d/u/0/edit?mid=1eOgUVSkh1CZmTMkuj97O9W22x6RE9k8Q&ll=38.99092547420223%2C-76.94216225&z=18)); doors to ASTR 120 are sometimes closed even when students are in the room - just open the door, walk in, and ask where to find the tutor. Note that the schedule indicates some of the tutoring sessions are instead on Zoom; use this link: http://ter.ps/astrzoom (http://ter.ps/astrzoom) .

Course Overview

This course presents a broad introduction to the science of astronomy and astrophysics. It is designed to be a two-semester sequence with the first semester (ASTR120) concentrating on our solar system and exoplanet systems, and the second semester (ASTR121) focusing on stars, galaxies, and the universe in general. The intent of this course is to give students a solid background in the primary physical concepts relevant to astronomy and astrophysics, and a broad exposure to the astronomical universe. **This course is for astronomy majors or those with a strong interest and background in physical sciences.**

In addition to learning about our universe, a primary goal of this course is to develop scientific thinking and problem-solving abilities. Equations and numerical calculations will be a major component of this class. **A working knowledge of algebra, geometry, and trigonometry is essential for this class.** We will be using occasional introductory calculus this semester.

This course satisfies a 3-credit Physical Sciences (PS) CORE component and a Distributive Studies Natural Sciences (DSNS) General Education component. Students must have completed or be concurrently enrolled in MATH 140.

Course Structure and Expectations

There are two lectures and one discussion period each week.

The lectures are on Tuesdays and Thursdays from 11 am to 12:15 pm in CCC (https://maps.umd.edu/map/index.html?Welcome=False&MapView=Detailed&LocationType=Building&LocationName=097) 1205 (map). (https://www.google.com/maps/d/edit?mid=1eOgUVSkh1CZmTMkuj97O9W22x6RE9k8Q&usp=sharing) The lectures provide a crucial forum for general questions and class discussion, and include individual and group work on questions and

problems that I will pose. You are expected to attend lectures, and you are responsible for all material in the posted lecture notes, apart from anything clearly indicated as optional or bonus material, even if we do not cover it in lecture.

You will be provided with a voting card for class participation that you must bring to each lecture. If you lose your voting card, you can make or print a new one (**PDF available here** ⬇ **(https://umd.instructure.com/courses/1327665/files/68772706/download?download_frd=1)**); there is also a **version available for your mobile device** ⬇ **(https://umd.instructure.com/courses/1327665/files/68772704/download?download_frd=1)**). This tool is meant to help me assess class mastery of learning goals, so it is important to be honest in your answers. You will not be judged on your answers, nor should you judge anyone else! However, it is important to come prepared each lecture by doing the assigned reading.

There will also be group work in lecture that will usually be graded. Since all members of a group receive the same score for a given exercise, it is important to be engaged and cooperate with your group. It is also critical to insist on further discussion if you do not feel satisfied with a particular outcome during a group exercise—this is a learning environment, not a contest, and everyone should help each other! Note you can also communicate with other students via the tools available for this course.

The discussion periods (Fridays, either at 1:00 pm or 2:00 pm depending on your section, in **ATL 2428 (https://drive.google.com/open?id=1D4IgSUX_4uFpGnBBh0O9a36Cv3vYusUO&usp=sharing)**) serve a variety of roles. Primarily they provide an opportunity to think about and apply the course material. These periods are also a forum for question-and-answer sessions, problem-solving practice, and group discussions of issues brought up in the lectures. You are expected to attend discussion, and a portion of your grade will depend on your participation in these sessions. You will usually be given in-class work during discussion section due at the end of the class time. Graduate student Jongwon Park will be leading the discussion sections. There is a separate syllabus for discussion section.

Learning Goals

We hope you develop an appreciation for our place in the universe by taking this course. In addition, at the end of this course you should be able to....

- Convey the current state of knowledge regarding basic astronomy, our solar system, and exoplanets to a non-specialist.
- Solve complex problems requiring application of multiple astrophysical concepts.
- Collaborate with others to develop shared knowledge.
- Write scientifically and communicate your results effectively.

Office Hours

You are welcome and encouraged to attend the office hours of myself, the TA, and grader; if these times don't work for you, we can try to accommodate other times (these must be arranged in advance).

Questions and Communicating with Instructors and TAs

For most questions, including logistics, assignments, content of the course, please use Piazza (https://piazza.com/umd/fall2022/astr120/home) (see below for instructions on using Piazza). Many other students will have these questions too! And ideally other students will know the answer and respond much quicker than will I.

For personal issues that are about you, such as absences, do NOT use Piazza. For these, **Canvas Inbox mail** is best (click on Inbox on the far left and then compose a message). If for some reason you must use your own e-mail program, PLEASE be sure to start your Subject line with "ASTR120"; otherwise we may take longer or even fail to notice your e-mail.

Course Information and Notifications

This syllabus, the course schedule, homework assignments, and other course-related information can be accessed on ELMS/Canvas. IMPORTANT: we will be using Piazza, so the plan will be that most class notifications will be posted on Piazza. If you cannot access our Canvas or Piazza pages by the second week of classes, let us know.

Reading Material

Textbook

We will use the OpenStax Astronomy textbook by Fraknoi, Morrison, and Wolff (https://openstax.org/details/books/astronomy) . It is available for free on-line. Rather than rely on internet access (in fact, the publisher's website for another ASTR 120 textbook suddenly became inaccessible), be sure to download the pdf to whatever devices you will be using during the course. You can find the link on the textbook site, but here's a link for convenience. (https://assets.openstax.org/oscms-prodcms/media/documents/Astronomy-OP_zItt6LJ.pdf)

Supplementary Reading

Our astronomy faculty (in particular Cole Miller and Derek Richardson) have written **Supplementary Notes** useful for ASTR 120. We will use some of these. Although some of the material is beyond the expectations for this course given the wide range of backgrounds of entering students meeting the course prerequisites, these notes are extremely useful for anyone contemplating going on in astronomy or physics and related disciplines, and the sooner you master their content the better for you.

Reading Assignments

The textbook and supplementary reading assignments for each lecture are linked in the last section of this Syllabus (see below) and in the Reading section of Assignments. I expect you to complete the assigned reading *prior* to class. It is also helpful to re-read the reading material (and review the lecture slides and your notes) after class to consolidate your knowledge.

Grades

There will be two "midterms" and one final exam in this course. Overall grades will be determined by these exams, homework assignments, discussion sections, in-class whiteboard activity and participation, with the following weighting:

Component	Weight
Midterm 1	12.5%
Midterm 2	12.5%
Final Exam	20%
Homework	20%
Discussion	15%
Whiteboards	10%
Participation	10%

Multiple graded items within each category above have the same weight; for example, if there are *N* whiteboard assignments, each is worth 1/*N* of your total homework grade. If an assignment group has a "Rule" dropping the *M* assignments with your lowest grades in that group, then the weight for each included assignment is 1/(N-M); note that your lowest grades might be unexcused missing assignments. Drop "Rules", if any, can be found for each assignment group in the Assignment section of our Canvas pages.

The following scale will be used to compute letter grades:

Grade	Range
A+	97% and above
A	93% to below 97%
A–	90% to below 93%
B+	87% to below 90%

B	83% to below 87%
B–	80% to below 83%
C+	77% to below 80%
C	73% to below 77%
C–	70% to below 73%
D+	67% to below 70%
D	63% to below 67%
D–	60% to below 63%
F	below 60%

For this course, letter grades correspond to the University's marking system, as follows:

- A+, A, A– denote excellent mastery of the subject and outstanding scholarship;
- B+, B, B– denote good mastery of the subject and good scholarship;
- C+, C, C– denote acceptable mastery of the subject;
- D+, D, D– denote borderline understanding of the subject, marginal performance, and it does not represent satisfactory progress toward a degree;
- F denotes failure to understand the subject and unsatisfactory performance.

As a hypothetical example, suppose you scored 60/75 on midterm 1, 65/75 on midterm 2, and 110/120 on the final, and earned 79% on homework, 90% in discussion, 85% for in-class whiteboard, and 100% on participation. Your final grade percentage would be 0.125(60/75) + 0.125(65/75) + 0.2(110/120) + 0.2(.79) + 0.15(0.9) + 0.1(0.85) + 0.1(1) = 86.966667%, which earns a B grade (note that this calculation will not be rounded, so this is below the 87% threshold required for a B+).

There will be no curve on the final grades. There may need to be some adjustment to scores depending on the class average. However, any adjustment will be to lower the grade boundaries given above, never to raise them.

This class is too large to provide extra-credit opportunities for missed work or any other reason. The participation and whiteboard components of your grade (together totaling 20% of your grade) provide an opportunity for your hard work to be rewarded.

Mid-semester grades will be based solely on work completed and graded by the time the grades are submitted.

Midterms and Exam

There will be two midterm examinations, each given during class hours. Check the course schedule below for the dates. All midterms are held in the lecture room. These exams (and the final) are closed book with no notes, and you are required to bring a calculator. Each test will cover material presented in the reading and the lectures (excluding optional or bonus material clearly identified as such). The second midterm and the final are *cumulative*, so you are responsible for material covered by the earlier exam(s). If for whatever reason the University is officially closed on the exam date, the exam shifts to the next available date.

After each midterm, you may take a copy of the exam questions with you and within one week may turn in new responses for any of the questions or their subparts for regrading (except the bonus). For example, you could turn in all of question 2 for regrading, or just question 3b, or both. You can use your class notes, textbooks, or other sources, including consultation with other students, to complete the retest, but just like for homework (see below) you must turn in your own work. The retest questions are graded at a higher standard than the regular exam, with limited partial credit for answers (generally, the only available credit for a question will be 0%, 50%, or 100%; 100% requires your answers for the entire question to be correct and complete) . If your score on a question is higher on the retest than on the actual midterm, the average of the two scores will be taken as the new score for that question. This gives you an opportunity to improve your exam score and reinforce the concepts being examined, hopefully resulting in even better understanding of the material (and a higher grade!). This is entirely optional, but you are strongly encouraged to consider doing the retests, at least for the tougher questions.

According to the University examination schedule, the final exam for this course will be held on Wednesday, December 14, from 8:00 am to 10:00 am, in our usual lecture room CCC 1205; there will be **not** be a retest available for the final.

Homework Assignments

Homework will be assigned most weeks. It is expected that each homework assignment will take a few hours to complete.

You are required to submit your homeworks in PDF format to the ELMS site. Ideally, you will use Word or LaTeX or other such programs, including for your equations. Equations are especially well-typeset in LaTeX, which is very useful to learn if you plan to have a career in astronomy, physics, math, etc. It is of course usually best to solve numerical problems on paper, and once you are done, write them in LaTeX or Word. However, we will allow handwritten submissions, provided the scan or photo used to produce the PDF must be well lit and in focus, and that the handwriting is clear. The grader will take off points for submissions that are hard to read, and if they cannot read or misread what you write due to poor quality handwriting or scan, you will lose points nonetheless.

To make it easier for our grader, the PDF file should be named "Lastname_Firstname_HWN.pdf". For example, if your name is Pat Smith and you are submitting homework 6, the PDF file you upload

would be named Smith_Pat_HW6.pdf. Thanks for helping!

All homeworks are due by **11:59 pm** on the due date (i.e., before midnight). Homeworks turned in after this will be considered late and penalized at least 20% (the penalty could be more, depending on how late you are). Homework solutions are posted two days after the due date, so homeworks submitted more than two days past the due time will not be accepted. Note that electronic submission means that you can turn in your assignment electronically at home, or even if you are sick. If you experience a valid emergency, you must write to me in Canvas or email **before the due date** telling me why you will be late. In this case, you must secure a valid written excuse and arrange with me to have the homework turned in as soon as possible and, in any event, absolutely no later than the beginning of the next lecture, because that is when we will distribute solutions.

Always show all of your work, use the appropriate number of significant figures, and include units (e.g., meters, seconds, light years) as appropriate!

You may work in groups (in person, on Piazza, group chats) to discuss problem-solving strategy, but **you must submit your own solution to each assignment or you are violating the** Code of Academic Integrity (https://policies.umd.edu/academic-affairs/university-of-maryland-code-of-academic-integrity) **.** To be particularly clear about this, everyone in a group must do their own, separate, non-duplicated write-up; for example, if you all collaborate on Google Docs or elsewhere for a homework, you are not allowed to all submit that same homework. Note that you must cite your source(s) on any essay-style questions, and this includes any websites you referenced. Websites are fair game, but you must indicate the URL of any website that you used.

Please also realize that sharing write-ups of solutions is a violation of the Code of Academic Integrity (https://policies.umd.edu/academic-affairs/university-of-maryland-code-of-academic-integrity) - this is "facilitating" cheating. For example, if you find the solution on the internet and post it, this is facilitating. By the Code, everyone, including students, has the responsibility to report violations; I have been involved in a number of honor cases where other students reported the violation to the Office of Student Conduct. See the section below on the Code for more information.

Whiteboard Group Work in Lecture (Google Jamboard)

There will be group work in lecture using portable whiteboards that will usually be graded. These exercises are designed to actively engage you in learning and collaboration. Since all members of a group receive the same score for a given exercise, it is important to be engaged and cooperative with your group. It is also critical to insist on further discussion if you do not feel satisfied with a particular outcome during a group exercise—this is a learning environment, not a contest, and everyone should help each other!

The names of each student should be written on your group whiteboard. At the conclusion of an exercise, a student in your group should upload the photo of the whiteboard using **Google Jamboard**

(https://jamboard.google.com/) Circle their name so it is clear who has uploading responsibility. You can download Google Jamboard on the iPhone or Android app stores or use a web browser. Note that you to access our class jamboard you will need to be logged in to Google Jamboard using your UMD login credentials.

Here is the link for our **class Google Jamboard. (Links to an external site)** **(https://jamboard.google.com/d/1omlIrFy8cBkiZEhU4n-18FvS8FF31tQvGnQNWZ1IchY/edit?usp=sharing)** and here is a QR code, which also takes you to our ASTR 120 Jamboard.

You should have access to our ASTR 120 Jamboard if you logged in via your UMD credentials, but if Jamboard says you don't have permission, try requesting access from within the website or Jamboard app.

Participation and Piazza

Part of your grade will be based on your active participation in the class. This consists of asking and answering questions in lecture class and on the class discussion board (Piazza).

We will use Piazza as an aid to classroom engagement and learning. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza (except for personal matters, such as absences). If you have any problems regarding Piazza itself, email the developers at team@piazza.com.

You should have received an invitation from Piazza to join our class Piazza. Access the course at **https://piazza.com/umd/spring2022/astr121 (https://piazza.com/umd/spring2022/astr121)** or click on the UMD Piazza menu item to the left in Canvas.

Some tips on using Piazza can be **found at this link (https://pages.cs.wisc.edu/~deppeler/cs400/pages/piazza_tips.html)** . Note there is a Piazza app.

Please use Piazza for questions about the content of the course, course logistics, and astronomy. Basically anything that isn't personal, for which you should use Canvas Inbox for email to the instructor, TA, or grader.

Check out the first two Participation/Piazza assignments.

Course Policies

By enrolling in this course you agree to abide by the campus **Course Related Policies (http://www.ugst.umd.edu/courserelatedpolicies.html)** , which apply to this course. These include policies on student conduct, attendance, grades, and your rights. Specific considerations regarding some of these policies are below.

Missed Exams, Assignments, or Classes

Valid excuses for any missed test, exam, or assignment (including both in class and out of class) must satisfy the requirements described in **Course Related Policies (http://www.ugst.umd.edu/courserelatedpolicies.html)** .

The major scheduled grading events in this course are the two midterms and the final exam on the dates shown in the schedule below. Except in the case of emergencies, an excused absence from an exam must be requested in writing during the schedule adjustment period. A medically necessitated absence during an exam requires documentation from a medical professional. Any other emergency necessitating missing an exam requires a prompt written explanation. For an excused absence during an exam, a make-up exam will be given at a mutually agreed upon time. Make-up exams may be written or oral, at my discretion.

If you must miss a test or exam or assignment, or are unable to attend a lecture or discussion, and think you qualify for an excused absence, you must notify me or the relevant TA or grader **in advance as soon as you know about the absence,** as defined and detailed in **Course Related Policies (http://www.ugst.umd.edu/courserelatedpolicies.html)** , or as soon as possible in extenuating circumstances.

Attendance and in-class participation are a requirement for the lectures and discussion section of this course.

For an excused absence from class or discussion, we will waive the relevant assignment (ie whiteboard activity or discussion activity). A waiver means that we determine your grade for the assignment group from all the assignments except the excused one(s). In other words, an excused absence from these counts neither for you nor against you.

In all other cases, you'll have to rely on the "drop" policy for the relevant assignment group, in which (depending on the assignment group) your lowest *n* scores are automatically dropped; note

that *n* depends on the assignment group and is 0 for some groups (eg midterms). For out of class work, such as homeworks and pre-discussion questions, do the work early so that an unexpected illness or scheduled absence doesn't force you to use a drop.

Use of Electronic Devices

You may use smartphones, tablets, and/or laptops in class (but NOT during exams) for taking notes or looking up something pertinent to the discussion. Otherwise you are expected to be focusing on the lecture or class work and not distracting your fellow students. All phones must be silenced. If you are expecting an urgent call, let one of us know before the lecture begins to minimize disruption. If use of an electronic device becomes disruptive (and this can include loud keyboard tapping!), you will be asked to be reseated or to leave the room altogether.

If you ask to leave the room during a test or exam, you must leave all electronic devices with the proctor.

Code of Academic Integrity (Honor Code)

Our campus has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity (https://policies.umd.edu/academic-affairs/university-of-maryland-code-of-academic-integrity) or the Student Honor Council, please visit **http://www.studentconduct.umd.edu/ (http://www.studentconduct.umd.edu/)** .

To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations: "I pledge on my honor that I have not given or received any unauthorized assistance on this examination/assignment."

There are a couple of potential gray areas that arise naturally in this course. For homework and retests, you are permitted to work with other students in the class. In fact, you are encouraged to do so. This includes discussion of the problem and solution in a cooperative, mutually contributing fashion. However, you should work out and write out your answer in your own words. You should NOT, under any circumstances, simply copy someone else's homework and call that "working together." It is far better to ask for an extension than to copy someone else's homework! You should also NOT seek out or use "solution sets" from previous students. You may seek help on homework or retest problems from the tutors, TA, or myself.

If you have questions regarding what is appropriate and what is not, please talk to me.

Masking Requirement

We follow campus guidelines for safety and health (https://umd.edu/4Maryland/health-plan) during the COVID pandemic. Your mask use in the classroom is strongly encouraged for the health and safety of you and others in the classroom, but it is no longer required. KN95 or N95 masks properly fitted are much better than cloth masks.

A Safe Learning Environment

The campus is meant to be a safe place to learn, free from harassment and intimidation of any kind. If you have experienced any form of harassment as a member of the university community, you should contact the **Office of Civil Rights & Sexual Misconduct (http://www.umd.edu/Sexual_Misconduct/)** on campus. Please be aware that faculty are required by law to report any instance of misconduct brought to their attention. For confidential assistance, contact **CARE (http://www.health.umd.edu/care)** . The Department of Astronomy has web pages with **relevant links (http://www.astro.umd.edu/EDI/EDIResourcePage.html#Resources)** . See also the Equity/Diversity tab on the **Department of Astronomy home page. (http://www.astro.umd.edu)**

We are happy to be informed of your preferred gender pronouns.

Students with Special Needs

Students with a documented disability or accessibility needs who wish to discuss academic accommodations should contact us as soon as possible. Also be sure to contact the campus **Accessibility & Disability Service (https://counseling.umd.edu/ads)** if you have not done so already. Students requiring accommodations for exams must provide the necessary documentation to the instructor no later than the lecture prior to the exam to ensure that the request can be met.

Financial Aid

If you are experiencing difficulty paying for tuition or textbooks, consider contacting the **Office of Student Financial Aid (http://www.financialaid.umd.edu)** .

Additional Help

If you are experiencing difficulties in keeping up with the academic demands of this course, you may wish to take a look at the Academic Resources (https://counseling.umd.edu/academic) available on campus **(http://www.counseling.umd.edu/LAS/)** . Academic coaches can help with time management, reading, math learning skills, note-taking, and exam preparation skills. All their services are free to UM students. For other counseling needs, try the campus **Counseling Center (http://www.counseling.umd.edu/)** and the campus Health Center (https://health.umd.edu/medical-behavioral-health) . (https://health.umd.edu/medical-behavioral-health)

Copyright Notice

Course Summary:

Date	Details	Due
Tue Aug 30, 2022	Class 1: The Modern Universe (https://umd.instructure.com/courses/1327665/assignments/6062609)	due by 11am
	WB 08/30 (https://umd.instructure.com/courses/1327665/assignments/6068353)	due by 11:59pm
Thu Sep 1, 2022	Class 2: Quantitative Reasoning in Astronomy (https://umd.instructure.com/courses/1327665/assignments/6062618)	due by 11am
	WB 09/01 (https://umd.instructure.com/courses/1327665/assignments/6077216)	due by 11:59pm
Fri Sep 2, 2022	Discussion Section 1 (https://umd.instructure.com/courses/1327665/assignments/6062626)	due by 8am
	P1 (https://umd.instructure.com/courses/1327665/assignments/6068466)	due by 11:59pm
Tue Sep 6, 2022	Class 3: The Night Sky (https://umd.instructure.com/courses/1327665/assignments/6062619)	due by 11am
	Homework #1 (https://umd.instructure.com/courses/1327665/assignments/6062641)	due by 11:59pm
	WB 09/06 (https://umd.instructure.com/courses	due by 11:59pm

Date	Details	Due
	/1327665/assignments/6147236)	
Thu Sep 8, 2022	Class 4: Seasons, Phases, and Eclipses (https://umd.instructure.com/courses/1327665/assignments/6062620)	due by 11am
	WB 09/08 (https://umd.instructure.com/courses/1327665/assignments/6147237)	due by 11:59pm
Fri Sep 9, 2022	Discussion Section 2 (https://umd.instructure.com/courses/1327665/assignments/6062632)	due by 8am
Tue Sep 13, 2022	Class 5: Historical Perspectives (https://umd.instructure.com/courses/1327665/assignments/6062621)	due by 11am
	Homework #2 (https://umd.instructure.com/courses/1327665/assignments/6062643)	due by 11:59pm
Thu Sep 15, 2022	Class 6: Laws of Motion (https://umd.instructure.com/courses/1327665/assignments/6062622)	due by 11am
	WB 09/15 (https://umd.instructure.com/courses/1327665/assignments/6155799)	due by 11:59pm
Fri Sep 16, 2022	Discussion Section 3 (https://umd.instructure.com/courses/1327665/assignments/6062633)	due by 8am
Mon Sep 19, 2022	P2 (https://umd.instructure.com/courses/1327665/assignments/6068504)	due by 11:59pm

Date	Details	Due
Tue Sep 20, 2022	Class 7: Conservation Laws and Gravity (https://umd.instructure.com/courses/1327665/assignments/6062623)	due by 11am
	Homework #3 (https://umd.instructure.com/courses/1327665/assignments/6062644)	due by 11:59pm
	WB 09/20 (https://umd.instructure.com/courses/1327665/assignments/6155802)	due by 11:59pm
Thu Sep 22, 2022	Class 8: Orbits and Tides (https://umd.instructure.com/courses/1327665/assignments/6062624)	due by 11am
	WB 09/22 (https://umd.instructure.com/courses/1327665/assignments/6155803)	due by 11:59pm
Fri Sep 23, 2022	Discussion Section 4 (https://umd.instructure.com/courses/1327665/assignments/6062634)	due by 8am
Tue Sep 27, 2022	Class 9: Light and Matter (https://umd.instructure.com/courses/1327665/assignments/6062625)	due by 11am
	Homework #4 (https://umd.instructure.com/courses/1327665/assignments/6062645)	due by 11:59pm
	WB 09/27 (https://umd.instructure.com/courses/1327665/assignments/6161898)	due by 11:59pm
Thu Sep 29, 2022	Class 10: Spectroscopy (https://umd.instructure.com/courses/1327665/assignments/6062599)	due by 11am
	P3 (https://umd.instructure.com/courses/1327665/assignments	due by 11:59pm

Date	Details	Due
	/6068565)	
	WB 09/29 (https://umd.instructure.com/courses/1327665/assignments/6164309)	due by 11:59pm
Fri Sep 30, 2022	Discussion Section 5 - Review (https://umd.instructure.com/courses/1327665/assignments/6062635)	due by 8am
Tue Oct 4, 2022	Class 11: Telescopes (https://umd.instructure.com/courses/1327665/assignments/6062600)	due by 11am
	Homework #5 (https://umd.instructure.com/courses/1327665/assignments/6062646)	due by 11:59pm
	WB 10/04 (https://umd.instructure.com/courses/1327665/assignments/6166765)	due by 11:59pm
Thu Oct 6, 2022	Midterm 1 (https://umd.instructure.com/courses/1327665/assignments/6062651)	due by 11am
Fri Oct 7, 2022	Discussion Section 6 (https://umd.instructure.com/courses/1327665/assignments/6062636)	due by 8am
Tue Oct 11, 2022	Class 12: Overview of the Solar System (https://umd.instructure.com/courses/1327665/assignments/6062601)	due by 11am
Thu Oct 13, 2022	Class 13: Formation of the Solar System (https://umd.instructure.com/courses/1327665/assignments/6062602)	due by 11am

Date	Details	Due
	P4 (https://umd.instructure.com/courses/1327665/assignments/6068567)	due by 11:59pm
Fri Oct 14, 2022	Discussion Section 7 (https://umd.instructure.com/courses/1327665/assignments/6062637)	due by 8am
Tue Oct 18, 2022	Class 14: Planetary Geology (https://umd.instructure.com/courses/1327665/assignments/6062603)	due by 11am
	Homework #6 (https://umd.instructure.com/courses/1327665/assignments/6062647)	due by 11:59pm
Thu Oct 20, 2022	Class 15: Terrestrial Surfaces (https://umd.instructure.com/courses/1327665/assignments/6062604)	due by 11am
Fri Oct 21, 2022	Discussion Section 8 (https://umd.instructure.com/courses/1327665/assignments/6062638)	due by 8am
Tue Oct 25, 2022	Class 16: Planetary Meteorology (https://umd.instructure.com/courses/1327665/assignments/6062605)	due by 11am
	Homework #7 (https://umd.instructure.com/courses/1327665/assignments/6062648)	due by 11:59pm
Thu Oct 27, 2022	Class 17: Terrestrial Atmospheres (https://umd.instructure.com/courses/1327665/assignments/6062606)	due by 11am
Fri Oct 28, 2022	Discussion Section 9 (https://umd.instructure.com/courses/1327665/assignments/6062639)	due by 8am

Date	Details	Due
Tue Nov 1, 2022	Class 18: Terrestrial Atmospheres (https://umd.instructure.com/courses/1327665/assignments/6062607)	due by 11am
	Homework #8 (https://umd.instructure.com/courses/1327665/assignments/6062649)	due by 11:59pm
Thu Nov 3, 2022	Class 19: Jovian Planets (https://umd.instructure.com/courses/1327665/assignments/6062608)	due by 11am
Fri Nov 4, 2022	Discussion Section 10 - Review (https://umd.instructure.com/courses/1327665/assignments/6062627)	due by 8am
Tue Nov 8, 2022	Midterm 2 (https://umd.instructure.com/courses/1327665/assignments/6062652)	due by 11am
Thu Nov 10, 2022	Class 20: Jovian Moons, Rings, Asteroids and Meteorites (https://umd.instructure.com/courses/1327665/assignments/6062610)	due by 11am
Fri Nov 11, 2022	Discussion Section 11 (https://umd.instructure.com/courses/1327665/assignments/6062628)	due by 8am
Tue Nov 15, 2022	Class 21: Asteroids and Meteorites (https://umd.instructure.com/courses/1327665/assignments/6062611)	due by 11am
Thu Nov 17, 2022	Class 22: Comets, and Dwarf Planets (https://umd.instructure.com/courses/1327665/assignments/6062612)	due by 11am

Date	Details	Due
Fri Nov 18, 2022	Discussion Section 12 (https://umd.instructure.com/courses/1327665/assignments/6062629)	due by 8am
Tue Nov 22, 2022	Class 23: Impact Hazard (https://umd.instructure.com/courses/1327665/assignments/6062613)	due by 11am
	Homework #9 (https://umd.instructure.com/courses/1327665/assignments/6062650)	due by 11:59pm
Tue Nov 29, 2022	Class 24: Solar Structure (https://umd.instructure.com/courses/1327665/assignments/6062614)	due by 11am
Thu Dec 1, 2022	Class 25: Solar Activity (https://umd.instructure.com/courses/1327665/assignments/6062615)	due by 11am
Fri Dec 2, 2022	Discussion Section 13 (https://umd.instructure.com/courses/1327665/assignments/6062630)	due by 8am
Tue Dec 6, 2022	Class 26: Exoplanet Discovery (https://umd.instructure.com/courses/1327665/assignments/6062616)	due by 11am
	Homework #10 (https://umd.instructure.com/courses/1327665/assignments/6062642)	due by 11:59pm
Thu Dec 8, 2022	Class 27: Exoplanet Characterization (https://umd.instructure.com/courses/1327665/assignments/6062617)	due by 11am
Fri Dec 9, 2022	Discussion Section 14 - Review (https://umd.instructure.com/courses/1327665/assignments/6062631)	due by 8am

Date	Details	Due
Mon Dec 12, 2022	**Bonus Lecture/Piazza Participation** (https://umd.instructure.com/courses/1327665/assignments/6068492)	due by 11:59pm
Wed Dec 14, 2022	**Final Exam** (https://umd.instructure.com/courses/1327665/assignments/6062640)	due by 8am