University of Nebraska - Lincoln

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Department of Physics and Astronomy: Syllabi

Instructional Materials in Physics and Astronomy

Fall 2023

ASTR 103

Course Syllabus

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Fall Astronomy 103 Section 002

Instructor	Dr. Kevin M. Lee
Class Time	002 MWF 10:30 am - 11:20 am
Location	Jorgensen Hall 110
Zoom Student Office Hours (see modules page for Zoom link)	MWF 2:30 - 3:20 pm (and by appointment)
Email	**klee6@unl.edu (mailto:klee6@unl.edu)**
TAs (in class and holding shifts in the Physics & Astronomy Resource Center/Zoom)	TBD

Course Overview: ASTR 103 is an ACE 4 descriptive survey course covering (a large amount of material in) introductory astronomy. Topics include a brief history of astronomy, astronomical coordinates and motions, light, stars and stellar evolution, galaxies, and our solar system. While it is a largely non-mathematical course in that very few calculations are required, a large amount of mathematical reasoning is used. Science is evidence-based and in all stages of this course we will focus on the observations upon which astronomers base their theories. The course will strongly emphasize modern pedagogies based upon "interactive engagement".

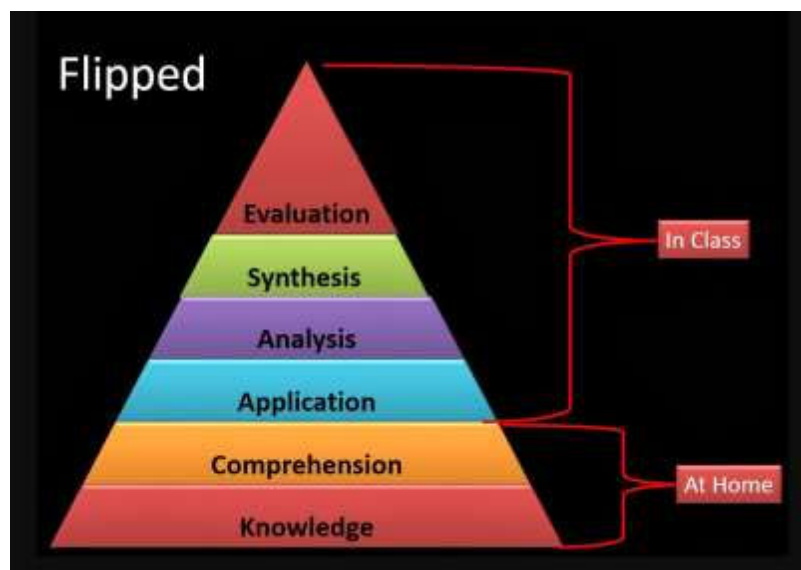**Required Course Materials**: All 4 should be brought to class every day!

- Required Course Packet —"Astronomy 103 Course Materials, Notes and Exercises" [Fall 2023 version, Herbig Haro Object on cover].
- iClicker Student (formerly REEF) app subscription — will allow you to vote on conceptual questions with a mobile device (smartphone, laptop, or tablet — smartphone preferred!) that you will bring to class. Cannot be a handheld remote!
- a Ruler and a Protractor — any will do, frequently useful in exercises.
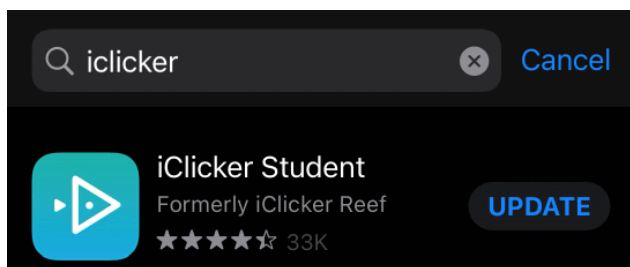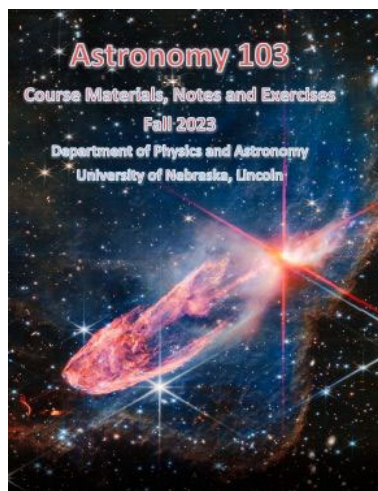
Reference Materials: There is no required textbook for this class. (You will be annotating notes in the course pack and completing exercises in the course pack.) However, you will need a procedure for looking up things that you don't understand. That can be any introductory astronomy textbook (Bennett, Seeds, etc.) or you can make use of the web links that are provided on the schedule pages (the Fraknoi and Strobel online texts are useful).

Educational Philosophy: Learning is not a spectator sport! Students don't learn much from listening to their instructor lecture or from reading a textbook — students learn by doing! Every effort will be made to make this course as interactive as possible with feedback supplied on a regular basis.

The general pedagogical approach used here is known as learner-centered instruction (and specific pedagogies include "flipping", "peer instruction" and "collaborative worksheets") as opposed to instructor-centered instruction. The role of the instructor changes from "sage on the stage" to "guide on the side", where the instructor's job is to create an environment where there are good support mechanisms to help students learn on their own. Students are asked to prepare before class and then participate in activities using this information in class. They are encouraged to be "active seekers of information" as opposed to passively listening to a lecture. Students are also encouraged to develop metacognitive skills — to be good at recognizing the concepts that they understand well and those that need additional work and a plan for improving understanding.

Collaborative activities of all sorts are used in student-centered learning. Students learn well both by explaining things and having things explained to them by peers. Many of these

collaborative activities make use of a model known as elicit-confront-resolve which has been shown to be effective in combating misconceptions.

It should be emphasized that this pedagogical approach and all of the instructional tools used in this course are informed by educational research. Considerable data has been taken from many students in many different courses illustrating the effectiveness of these techniques.

Instructional Components

Course Schedule: A thorough schedule is provided on the Canvas modules page for each of the 6 segments. It will contain links to many of the following components.

PreClass Lectures: All preclass lectures will be available through Canvas in iSpring software with narration and transcript. A set of simple notes is included in the course pack which you are encouraged to annotate as you view the lectures. You are expected to complete the preclass lecture(s) before coming to class. Presentations in iSpring stream over the Internet and are in HTML5.

Students are encouraged to be interactive when "experiencing" the preclass lectures. You will be asked to think about many things during the preclass lecture, experiment with simulations, and complete animated tasks. Please complete all exercises. You may need to repeat some or all of the slides and you should consult additional resources for all material that you do not understand. In the final section of the course packet, there are notes that may be helpful to follow along with.

PreFlights: A short quiz called a preflight will be given over each preclass lecture in the web-based assessment program Mobius. The preflight will help you assess whether or not you are sufficiently well prepared to participate in activities in class.

This should also be completed before class and a 10:30 am deadline will be preprogrammed into the Mobius system so that the preflight will be unavailable after that time. You may take each preflight 3 times up until that deadline, with only the highest score counting toward your grade. The preflights will contain randomization so they will not be the same each time. There are no make-ups of preflights. However, your lowest 3 preflight scores will be dropped based on the idea that everyone will occasionally have a schedule conflict or computer problem that will prevent them from successfully completing a preflight.

Class Participation: When you attend class you will already have completed the assigned lecture(s) and the corresponding preflight. You will already be familiar with basic vocabulary and concepts. This will allow class time to be spent on more important issues — like how to apply these concepts to substantial problems requiring higher-order thinking.

A number of different instructional methods will be utilized during class:

- Peer Instruction — This method of instruction/assessment involves posing conceptual questions (known as ConcepTests) to students and having them vote with their iClicker REEF App on the answer and occasionally discuss the solution with their peers before voting again. Points for voting

will be the biggest chunk of the Class Participation component of the grade. You are required to be in the classroom to vote on iClicker.

- Simulations — Many animations and simulations will be demonstrated in class. All of these can be installed as Native Apps or have links on our class home page so you can play with them after class. We are moving in the direction of smartphone simulations!
- Astronomy Demonstration Videos — Some of these short videos on common demonstrations are included in the preclass lectures and others will be used in class.
- Collaborative Worksheets — These are short exercises (10-15 minutes) that contain carefully crafted sequences of questions to help collaborative groups of students understand a concept. Many worksheets are "driven" by a simulation or demonstration.
- Ranking and Sorting Tasks — Short exercises (either pencil-paper or computer-based) requiring you to rank or sort objects according to a given criteria.

The majority of these methods will involve you working with your peers. It is vital that you fully participate!

Please be proactive in reaching out and forming bonds with other students. You are encouraged to ...

- be friendly, inviting, and receptive. You may need to move to another seat to form a group.
- not work with the same people every time. It would be optimal to have good working relationships with several students in the class.
- look out for other students who are possibly not being included. Our class will be most successful if all students are benefitting from collaboration and there is an inclusive environment.
- form diverse groups. We all bring different skills and experiences to group work and research on collaboration has shown the benefits of different perspectives.
- recognize that there are many ways to contribute and benefit from collaborative group work! Some students will ask good questions — effectively drawing attention to a foggy concept. Some students will explain things well to others and benefit themselves from the process of verbalizing and fine-tuning their understanding.

You are expected to participate in all class activities — voting on peer instruction questions, course pack worksheets, and smartphone activities. The vast majority of activities listed on the course schedule will be started in class and some will be completed (but not all due to time constraints). You are responsible for finishing and understanding all exercises listed on the course schedule (consider this as homework). Keys will be eventually posted for each assigned exercise.

Any behaviors that discourage or interfere with participation are not allowed. These include (but are not limited to) smartphone/laptop usage not related to the course, doing homework from other classes, sleeping, and anything involving the internet. Your instructor reserves the right to institute new policies to rectify inadequate levels of class participation and will ask students to leave if necessary!

Practice Exercise: A randomized practice exercise with feedback will be available for each segment in the Mobius system (that you will typically complete several times after a class on the material). Most

(possibly all) exam questions will come directly from these practice assignments. Only your highest score counts toward your grade, but you should probably take it again even after receiving a perfect score for thorough exam preparation.

NAAP Labs: Simulation-based labs will be assigned. These will involve computer simulations of the Nebraska Astronomy Applet Project. You are encouraged to work in groups on the projects, however you should have complete understanding of all work that you submit and you should be able to duplicate it. Answers should be written "in your own words".

Experiential Projects: Three experiential projects are required. One citizen science project is required and one student observatory project are required (you may complete 2 of either and there will be other choices). Note that a project may be completed on a visiting professor speaking on the evening of October 6th.

PDF files: Note that each NAAP Lab and Experiential Project must be submitted electronically as a single pdf file. This is not difficult to do, but you should probably develop this skill before facing a deadline. It can be done in many ways – many printers today have a built-in scanning capability and there are many free smartphone apps that can do this (e.g. Adobe Scan).

Exams: There will be 6 exams all given in the Mobius web-based assessment software in the **DLC (https://dlc-reserve.unl.edu/)** (a similar facility can be found on east campus in the Dinsdale Learning Commons). Exams are thoroughly randomized, but all questions will be extremely similar to questions available in the practice assignments beforehand. Students who fully participate in the course will have seen all material on the exams through the pre-lectures, in-class activities, and practice assignments.

A make-up window is provided for each exam allowing an additional take in the DLC. Only the highest score will be counted. It is hoped that this reduces exam stress and allows illnesses, quarantines, and life's complications to be effectively navigated. However, the net effect of the policy may be negative if it is used too often, as the class will have moved on to new material during the make-up window.

Exam Windows:

Exam	Regular Window	Make-up Windows
Exam 1	Sep 8 thru Sep 10	Sep 11 thru Sep 13
Exam 2	Sep 23 thru Sep 26	Sep 27 thru Sep 29
Exam 3	Oct 10 thru Oct 12	Oct 13 thru Oct 18
Exam 4	Nov 2 thru Nov 5	Nov 6 thru Nov 8
Exam 5	Nov 19 thru Nov 21	Nov 27 thru Nov 29
Exam 6	Dec 10 thru Dec 12	Dec 13 thru Dec 15

Note that if the city campus DLC is closed, there may be testing available on east campus on those days.

Grading

Percentage Ranges and Weighting:

Component	Weight
Exams (6)	60%
PreFlights (35 of 38)	10%
Practice Assignments	8%
Participation	8%
NAAP Labs (4)	8%
Experiential Projects (3)	6%

Range	Grade
85% - 100%	Some type of A
75% - 85%	Some type of B
65% - 75%	Some type of C
55% - 65%	Some type of D
0% - 55%	The only type of F

The grading scale will be similar to that shown above. The exact scale will not be defined until the end of the course and will take advantage of gaps in the percentile rankings. Borderline cases will be carefully considered. Grades will be fair, impartial, and final — they cannot be negotiated. Incompletes will only be given for verifiable extenuating circumstances, such as a long-term hospitalization.

Little effort will be made to attach letter grades to scores until the end of the term. Using the estimated grading scale and the percentage contributions of the various course components given above, students can do just as good a job of estimating their present grade in the course as their instructor. Canvas provides a percentage score, but it has limitations — zeroes must be entered in place of blanks in order for weights and drops to be calculated correctly. Students should check to make sure that scores are entered correctly in the Canvas gradebook.

Time Commitment: Between preclass lectures, preflights, projects, NAAP labs, and studying, you should expect to spend 2 to 3 hours outside of class for every hour of class time.

Attendance: It is imperative that you come prepared and participate in every class period. This is a rapidly paced course where much of the subject matter builds upon previously covered material. Numerous exercises will be done in class to help you master the material (and they will be very similar to exercises that will be placed on the exams). This is also a complicated course (with many web-based components) and you need to attend class to have a good understanding of what's going on!

Instructional Continuity: UNL has carefully specified rules regarding the cancellation of in-person classes available **here (https://executivevc.unl.edu/academic-excellence/teaching-resources/instructional-**

continuity-guidance) . Since we have exams at the DLC Exams Commons with reserved dates, it is very important for us to stay on schedule. Since the preclass lectures, preflights, and practice exercises will already be available, we only need to handle the interaction of classtime. If class is cancelled, **your instructor will run class at the regularly schedule time on Zoom** on the same link used for office hours on the Modules Page. This is in effect for the August 30 Volleyball Day and on any "snow day".

Smartphones: You have been required to vote in class with a smartphone (or other mobile device) using the iClicker Student (REEF) App. There are two motivations for this: 1) If UNL were forced to revert to zoom instruction (or your instructor was in quarantine), you would be able to continue voting remotely on clicker questions using the REEF app over Zoom. 2) Delivering course content on student smartphones is a major goal in education. Please endeavor to have a QR-code reading capability for your smartphone camera.

In addition to iClicker Student, you are asked to install 3 apps on your smartphone:

- Solar System Scope
- Stellarium Mobile
- Totality (by Big Kids Science)

All three have both IoS and Android versions and are free.

Covid Information: The **Pandemic in 2023** information is available at: **https://covid19.unl.edu/ (https://covid19.unl.edu)**

Please feel free to wear a mask if it makes you more comfortable. You will be encouraged to work closely with other students in groups.

Instructional Research in this Course

Research on Astronomy Smartphone Simulations: Your instructor Kevin Lee, Dr. Deepika Menon of the College of Education and Human Sciences, Dr. Manda Williamson of the Psychology Department, and undergraduate student Simone Hill will be collecting information on the effects of smartphone simulations on your knowledge of astronomy and attitudes toward science. This study has received IRB approval: **IRB Approval Letter.pdf (https://canvas.unl.edu/courses/156574/files/16157071?wrap=1)** ↓ **(https://canvas.unl.edu/courses/156574/files/16157071/download?download_frd=1)**

Study Title: Development and Research on Engaging Smartphone Simulations in Introductory College Astronomy

Purpose of the Study: We wish to improve college introductory astronomy classes by creating HTML5 simulations that will run upon student smartphones and generate knowledge regarding simulation efficacy. The simulations will be vibrant visualizations illustrating an astronomical phenomena with sliders, checkbox options, and draggable components that allow students to experiment with inputs to the simulation environment and observe the outcomes. We want to take advantage of the tremendous prevalence of smartphones among college students and their special affinity for them. One can argue

that delivering instructional tools tackling astronomy concepts on the devices that students love offers special promise for forging connections between students and science -- benefitting both their understanding of astronomy and their attitudes toward science. But we need to do the research and see if it supports that argument.

Components of the Study: There are several components to the study. Student participation in all components of the study is voluntary.

-- All students will be asked to complete two surveys on their attitudes toward astronomy and their knowledge of important astronomy concepts – one early in the course and one late in the course. Students will receive 15 participation points for completion of each survey, regardless of consenting to the use of responses in the research.

-- A small group of students will be invited to participate in a Zoom interview with Simone Hill. Your instructor will not be aware of which students are participating.

-- Simone Hill will be attending our class regularly and documenting what goes on in the classroom. Several times a semester she will be videotaping the class.

Benefits of the Study: The study can help improve instruction in introductory astronomy at UNL and nationally as this course is taken by over 300,000 students each year in the United States.

Course Summary:

Date	Details	Due
	PreFlight 1.3 (Recommended Completion Date: 10:30 am 8/28/2023) (https://canvas.unl.edu/courses/156574/assignments/1561859)	due by 11:59pm
Mon Aug 28, 2023	**PreFlight1.1 (Recommended Completion Date: 10:30 am 8/23/2023) (https://canvas.unl.edu/courses/156574/assignments/1561851)**	due by 11:59pm
	PreFlight1.2 (Recommended Completion Date: 10:30 am 8/25/2023) (https://canvas.unl.edu/courses/156574/assignments/1561855)	due by 11:59pm
Wed Aug 30, 2023	**PreFlight1.4 (https://canvas.unl.edu/courses/156574/assignments/1561861)**	due by 10:30am
Thu Aug 31, 2023	**PreFlight1.4 (https://canvas.unl.edu/courses/156574/assignments/1561861)**	due by 11:59pm

Date	Details	Due
	(1 student)	
Fri Sep 1, 2023	📝 **PreFlight1.5** **(https://canvas.unl.edu/courses/156574/assignments/1594550)**	due by 10:30am
Wed Sep 6, 2023	📝 **PreFlight1.6** **(https://canvas.unl.edu/courses/156574/assignments/1595122)**	due by 10:30am
	📝 **Exam1_DLC_Fall2023** **(https://canvas.unl.edu/courses/156574/assignments/1600121)**	due by 11:59pm
	📝 **NAAP Lab 1: Planetary Orbit Simulator** **(https://canvas.unl.edu/courses/156574/assignments/1540487)**	due by 11:59pm
	📝 **Practice1.1** **(https://canvas.unl.edu/courses/156574/assignments/1591750)**	due by 11:59pm
Sun Sep 10, 2023	📝 **Practice1.2/1.3** **(https://canvas.unl.edu/courses/156574/assignments/1595112)**	due by 11:59pm
	📝 **Practice1.4** **(https://canvas.unl.edu/courses/156574/assignments/1595117)**	due by 11:59pm
	📝 **Practice1.5** **(https://canvas.unl.edu/courses/156574/assignments/1595118)**	due by 11:59pm
	📝 **Practice1.6** **(https://canvas.unl.edu/courses/156574/assignments/1595119)**	due by 11:59pm
Mon Sep 11, 2023	📝 **PreFlight2.1** **(https://canvas.unl.edu/courses/156574/assignments/1601056)**	due by 10:30am
Wed Sep 13, 2023	📝 **PreFlight2.2** **(https://canvas.unl.edu/courses/156574/assignments/1601059)**	due by 10:30am
	📝 **Make-Up_Exam1_DLC_Fall2023** **(https://canvas.unl.edu/courses/156574/assignments/1600126)**	due by 11:59pm
Fri Sep 15, 2023	📝 **PreFlight2.3** **(https://canvas.unl.edu/courses/156574/assignments/1601060)**	due by 10:30am

Date	Details	Due
Sun Sep 17, 2023	📝 **Exercise 2.2b: Daily & Seasonal Effects of the Sun's Rays (https://canvas.unl.edu/courses/156574/assignments/1602961)**	due by 11:59pm
Mon Sep 18, 2023	📝 **PreFlight2.4 (https://canvas.unl.edu/courses/156574/assignments/1603685)**	due by 10:30am
Wed Sep 20, 2023	📝 **PreFlight2.5 (https://canvas.unl.edu/courses/156574/assignments/1603686)**	due by 10:30am
Fri Sep 22, 2023	📝 **PreFlight2.6 (https://canvas.unl.edu/courses/156574/assignments/1603687)**	due by 10:30am
Tue Sep 26, 2023	📝 **Exam2_DLC_Fall2023 (https://canvas.unl.edu/courses/156574/assignments/1606084)**	due by 11:59pm
Wed Sep 27, 2023	📝 **PreFlight3.1 (https://canvas.unl.edu/courses/156574/assignments/1606079)**	due by 10:30am
Fri Sep 29, 2023	📝 **PreFlight3.2 (https://canvas.unl.edu/courses/156574/assignments/1606080)**	due by 10:30am
	📝 **MakeUp_Exam2_DLC_Fall2023 (https://canvas.unl.edu/courses/156574/assignments/1606086)**	due by 11:59pm
	📝 **NAAP 2: The Rotating Sky (https://canvas.unl.edu/courses/156574/assignments/1601810)**	due by 11:59pm
	📝 **Practice2.1 (https://canvas.unl.edu/courses/156574/assignments/1601541)**	due by 11:59pm
	📝 **Practice2.2 (https://canvas.unl.edu/courses/156574/assignments/1601543)**	due by 11:59pm
	📝 **Practice2.3 (https://canvas.unl.edu/courses/156574/assignments/1601544)**	due by 11:59pm
	📝 **Practice2.4 (https://canvas.unl.edu/courses/156574/assignments/1603798)**	due by 11:59pm
	📝 **Practice2.5**	due by 11:59pm

Date	Details	Due
	[(https://canvas.unl.edu/courses/156574/assignments/1603799)](https://canvas.unl.edu/courses/156574/assignments/1603799)	
	📝 **Practice2.6** [(https://canvas.unl.edu/courses/156574/assignments/1603800)](https://canvas.unl.edu/courses/156574/assignments/1603800)	due by 11:59pm
	📝 **PreSurvey1** [(https://canvas.unl.edu/courses/156574/assignments/1602148)](https://canvas.unl.edu/courses/156574/assignments/1602148)	due by 11:59pm
	📝 **PreSurvey2** [(https://canvas.unl.edu/courses/156574/assignments/1602162)](https://canvas.unl.edu/courses/156574/assignments/1602162)	due by 11:59pm
Mon Oct 2, 2023	📝 **PreFlight3.3** [(https://canvas.unl.edu/courses/156574/assignments/1608304)](https://canvas.unl.edu/courses/156574/assignments/1608304)	due by 10:30am
Wed Oct 4, 2023	📝 **PreFlight3.4** [(https://canvas.unl.edu/courses/156574/assignments/1608305)](https://canvas.unl.edu/courses/156574/assignments/1608305)	due by 10:30am
Fri Oct 6, 2023	📝 **PreFlight3.5** [(https://canvas.unl.edu/courses/156574/assignments/1608307)](https://canvas.unl.edu/courses/156574/assignments/1608307)	due by 10:30am
Mon Oct 9, 2023	📝 **PreFlight3.6** [(https://canvas.unl.edu/courses/156574/assignments/1610047)](https://canvas.unl.edu/courses/156574/assignments/1610047)	due by 10:30am
	📝 **MakeUp_Exam2_DLC_Fall2023** [(https://canvas.unl.edu/courses/156574/assignments/1606086)](https://canvas.unl.edu/courses/156574/assignments/1606086) (1 student)	due by 11:59pm
Thu Oct 12, 2023	📝 **Exam3_DLC_Fall2023** [(https://canvas.unl.edu/courses/156574/assignments/1611712)](https://canvas.unl.edu/courses/156574/assignments/1611712)	due by 11:59pm
	📝 **NAAP Lab 3: Blackbody Curves** [(https://canvas.unl.edu/courses/156574/assignments/1540489)](https://canvas.unl.edu/courses/156574/assignments/1540489)	due by 11:59pm
Fri Oct 13, 2023	📝 **PreFlight4.1** [(https://canvas.unl.edu/courses/156574/assignments/1612470)](https://canvas.unl.edu/courses/156574/assignments/1612470)	due by 10:30am
Wed Oct 18, 2023	📝 **Preflight4.2** [(https://canvas.unl.edu/courses/156574/assignments/1613932)](https://canvas.unl.edu/courses/156574/assignments/1613932)	due by 10:30am
	📝 **MakeUp_Exam3_DLC_Fall2023** [(https://canvas.unl.edu/courses/156574/assignments/1611729)](https://canvas.unl.edu/courses/156574/assignments/1611729)	due by 11:59pm

Date	Details	Due
	📝 **Practice3.1** **(https://canvas.unl.edu/courses/156574/assignments/1608309)**	due by 11:59pm
	📝 **Practice3.2** **(https://canvas.unl.edu/courses/156574/assignments/1608310)**	due by 11:59pm
	📝 **Practice3.3** **(https://canvas.unl.edu/courses/156574/assignments/1610051)**	due by 11:59pm
	📝 **Practice3.4** **(https://canvas.unl.edu/courses/156574/assignments/1610058)**	due by 11:59pm
	📝 **Practice3.5** **(https://canvas.unl.edu/courses/156574/assignments/1610060)**	due by 11:59pm
	📝 **Practice3.6** **(https://canvas.unl.edu/courses/156574/assignments/1610064)**	due by 11:59pm
Thu Oct 19, 2023	📝 **PreFlight4.1** **(https://canvas.unl.edu/courses/156574/assignments/1612470)** (1 student)	due by 11:59pm
Fri Oct 20, 2023	📝 **PreFlight4.3** **(https://canvas.unl.edu/courses/156574/assignments/1613933)**	due by 10:30am
Mon Oct 23, 2023	📝 **PreFlight4.4** **(https://canvas.unl.edu/courses/156574/assignments/1615266)**	due by 10:30am
	📝 **MakeUp_Exam3_DLC_Fall2023** **(https://canvas.unl.edu/courses/156574/assignments/1611729)** (1 student)	due by 11:59pm
Wed Oct 25, 2023	📝 **PreFlight4.5** **(https://canvas.unl.edu/courses/156574/assignments/1615267)**	due by 10:30am
Fri Oct 27, 2023	📝 **PreFlight4.6** **(https://canvas.unl.edu/courses/156574/assignments/1615269)**	due by 10:30am
	📝 **Response Paper -- Dan Reichart** **(https://canvas.unl.edu/courses/156574/assignments/1611299)**	due by 11:59pm

Date	Details	Due
Mon Oct 30, 2023	⧉ **PreFlight4.7** **(https://canvas.unl.edu/courses/156574/assignments/1619212)**	due by 10:30am
Wed Nov 1, 2023	⧉ **PreFlight4.8** **(https://canvas.unl.edu/courses/156574/assignments/1619213)**	due by 10:30am
Sun Nov 5, 2023	⧉ **Exam4_DLC_Fall2023** **(https://canvas.unl.edu/courses/156574/assignments/1621560)**	due by 11:59pm
Mon Nov 6, 2023	⧉ **PreFlight5.1** **(https://canvas.unl.edu/courses/156574/assignments/1622463)**	due by 10:30am
Wed Nov 8, 2023	⧉ **PreFlight5.2** **(https://canvas.unl.edu/courses/156574/assignments/1622466)**	due by 10:30am
	⧉ **MakeUp_Exam4_DLC_Fall2023** **(https://canvas.unl.edu/courses/156574/assignments/1621561)**	due by 11:59pm
	⧉ **Practice4.1** **(https://canvas.unl.edu/courses/156574/assignments/1612471)**	due by 11:59pm
	⧉ **Practice4.2** **(https://canvas.unl.edu/courses/156574/assignments/1614346)**	due by 11:59pm
	⧉ **Practice4.3** **(https://canvas.unl.edu/courses/156574/assignments/1614347)**	due by 11:59pm
	⧉ **Practice4.4** **(https://canvas.unl.edu/courses/156574/assignments/1614348)**	due by 11:59pm
	⧉ **Practice4.5_4.6** **(https://canvas.unl.edu/courses/156574/assignments/1614350)**	due by 11:59pm
	⧉ **Practice4.7** **(https://canvas.unl.edu/courses/156574/assignments/1614352)**	due by 11:59pm
	⧉ **Practice4.8** **(https://canvas.unl.edu/courses/156574/assignments/1614353)**	due by 11:59pm
Fri Nov 10, 2023	⧉ **PreFlight5.3** **(https://canvas.unl.edu/courses/156574/assignments/1622467)**	due by 10:30am

Date	Details	Due
Mon Nov 13, 2023	📝 **PreFlight5.4 (https://canvas.unl.edu/courses/156574/assignments/1626002)**	due by 10:30am
Wed Nov 15, 2023	📝 **PreFlight5.5 (https://canvas.unl.edu/courses/156574/assignments/1626006)**	due by 10:30am
Fri Nov 17, 2023	📝 **PreFlight5.6 (https://canvas.unl.edu/courses/156574/assignments/1626013)**	due by 10:30am
Tue Nov 21, 2023	📝 **Exam5_DLC_Fall2023 (https://canvas.unl.edu/courses/156574/assignments/1628985)**	due by 11:59pm
Mon Nov 27, 2023	📝 **PreFlight6.1 (https://canvas.unl.edu/courses/156574/assignments/1631307)**	due by 10:30am
Wed Nov 29, 2023	📝 **PreFlight6.2 (https://canvas.unl.edu/courses/156574/assignments/1631308)**	due by 10:30am
	📝 **MakeUp_Exam5_DLC_Fall2023 (https://canvas.unl.edu/courses/156574/assignments/1628987)**	due by 11:59pm
	📝 **Practice5.1 (https://canvas.unl.edu/courses/156574/assignments/1622582)**	due by 11:59pm
	📝 **Practice5.2 (https://canvas.unl.edu/courses/156574/assignments/1622583)**	due by 11:59pm
	📝 **Practice5.3 (https://canvas.unl.edu/courses/156574/assignments/1622595)**	due by 11:59pm
	📝 **Practice5.4 (https://canvas.unl.edu/courses/156574/assignments/1622597)**	due by 11:59pm
	📝 **Practice5.5 (https://canvas.unl.edu/courses/156574/assignments/1622598)**	due by 11:59pm
	📝 **Practice5.6 (https://canvas.unl.edu/courses/156574/assignments/1622599)**	due by 11:59pm
Fri Dec 1, 2023	📝 **PreFlight6.3 (https://canvas.unl.edu/courses/156574/assignments/1631309)**	due by 10:30am

Date	Details	Due
Mon Dec 4, 2023	📝 **PreFlight6.4** (https://canvas.unl.edu/courses/156574/assignments/1637183)	due by 10:30am
Wed Dec 6, 2023	📝 **PreFlight6.5** (https://canvas.unl.edu/courses/156574/assignments/1637186)	due by 10:30am
Fri Dec 8, 2023	📝 **PreFlight6.6** (https://canvas.unl.edu/courses/156574/assignments/1637188)	due by 10:30am
	📝 **Citizen Science Response Paper** (https://canvas.unl.edu/courses/156574/assignments/1616450)	due by 11:59pm
	📝 **Observatory Project #1** (https://canvas.unl.edu/courses/156574/assignments/1611297)	due by 11:59pm
	📝 **PostSurvey1** (https://canvas.unl.edu/courses/156574/assignments/1631900)	due by 11:59pm
	📝 **PostSurvey2** (https://canvas.unl.edu/courses/156574/assignments/1631902)	due by 11:59pm
	📝 **Your Third Project (Misc)** (https://canvas.unl.edu/courses/156574/assignments/1616448)	due by 11:59pm
Sun Dec 10, 2023	📝 **NAAP Lab 6: Atmospheric Retention** (https://canvas.unl.edu/courses/156574/assignments/1540490)	due by 11:59pm
Tue Dec 12, 2023	📝 **Exam6_DLC_Fall2023** (https://canvas.unl.edu/courses/156574/assignments/1641454)	due by 11:59pm
Fri Dec 15, 2023	📝 **MakeUp_Exam6_DLC_F2023** (https://canvas.unl.edu/courses/156574/assignments/1641457)	due by 11:59pm
	📝 **Practice6.1** (https://canvas.unl.edu/courses/156574/assignments/1631311)	due by 11:59pm
	📝 **Practice6.2** (https://canvas.unl.edu/courses/156574/assignments/1631312)	due by 11:59pm

Date	Details	Due
	📝 **Practice6.3** **[(https://canvas.unl.edu/courses/156574/assignments/1631316)](https://canvas.unl.edu/courses/156574/assignments/1631316)**	due by 11:59pm
	📝 **Practice6.4** **[(https://canvas.unl.edu/courses/156574/assignments/1637190)](https://canvas.unl.edu/courses/156574/assignments/1637190)**	due by 11:59pm
	📝 **Practice_6.5_6.6** **[(https://canvas.unl.edu/courses/156574/assignments/1637191)](https://canvas.unl.edu/courses/156574/assignments/1637191)**	due by 11:59pm
Wed May 15, 2024	📝 **Mobius Gradebook Access** **[(https://canvas.unl.edu/courses/156574/assignments/1561846)](https://canvas.unl.edu/courses/156574/assignments/1561846)**	due by 11:59pm
	📝 **iClicker Grade** **[(https://canvas.unl.edu/courses/156574/assignments/1601792)](https://canvas.unl.edu/courses/156574/assignments/1601792)** (DESCRIPTIVE ASTRON ASTR103 SEC 002 Fall 2023)	
	📝 **iClicker Grade** **[(https://canvas.unl.edu/courses/156574/assignments/1601792)](https://canvas.unl.edu/courses/156574/assignments/1601792)** (HNRS: DESCRPT ASTRON ASTR103H SEC 002 Fall 2023)	
	📝 **Practice2.1** **[(https://canvas.unl.edu/courses/156574/assignments/1601541)](https://canvas.unl.edu/courses/156574/assignments/1601541)** (1 student)	
	📝 **Practice2.2** **[(https://canvas.unl.edu/courses/156574/assignments/1601543)](https://canvas.unl.edu/courses/156574/assignments/1601543)** (HNRS: DESCRPT ASTRON ASTR103H SEC 002 Fall 2023)	
	📝 **Practice2.2** **[(https://canvas.unl.edu/courses/156574/assignments/1601543)](https://canvas.unl.edu/courses/156574/assignments/1601543)** (1 student)	
	📝 **Practice2.3** **[(https://canvas.unl.edu/courses/156574/assignments/1601544)](https://canvas.unl.edu/courses/156574/assignments/1601544)** (1 student)	
	📝 **Practice2.4** **[(https://canvas.unl.edu/courses/156574/assignments/1603798)](https://canvas.unl.edu/courses/156574/assignments/1603798)** (1 student)	

Date	Details	Due
	📝 **Practice2.5** **(https://canvas.unl.edu/courses/156574/assignments/1603799)** (1 student)	
	📝 **Practice2.6** **(https://canvas.unl.edu/courses/156574/assignments/1603800)** (1 student)	
	📝 **Uploaded Part Score** **(https://canvas.unl.edu/courses/156574/assignments/1647360)**	