



UNIVERSITY OF CONNECTICUT

Department of Physics
College of Liberal Arts & Sciences

PHYS 1025Q – Introductory Astronomy with Laboratory Course Syllabus, Spring 2022

Syllabus information is subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Instructor:

◆ **Professor / Dr. Cara Battersby**

- **Email:** cara.battersby@uconn.edu
- **Virtual Office** (for office hours while course is online): <https://uconn-cmr.webex.com/meet/cab16109>
- **Office:** Gant South Building, GS113F
- **Office Hours:** Tuesdays 11:00am-12:00pm or by appointment (try: <https://calendly.com/battersby>)

Lab TAs:

◆ **Sean Oh**

- sean.oh@uconn.edu
- **Virtual Office** (for office hours while course is online): <https://uconn-cmr.webex.com/meet/seo15102>
- **Office:** Gant South S105
- **Office Hours:** 12pm – 1pm Wednesdays or by appointment

◆ **Tianye Liu**

- tianye.liu@uconn.edu
- **Virtual Office** (for office hours while course is online): <https://uconn-cmr.webex.com/meet/til18011>
- **Office:** Gant South S109
- **Office Hours:** Monday 10am -11am or by appointment

Class Meeting: Tues/Thurs 9:30-10:45am

Class Location:

- **First Two Weeks Virtual:** WebEx: <https://uconn-cmr.webex.com/meet/cab16109>
- Afterwards, **in person:** (Gant West) GW001

We hope to begin in person two weeks into the semester. If that changes, updates to the syllabus will be sent. We know that this is a very challenging time, so please know that we care about you and are here to help!

Lab Information

Lab Meeting Location: Gant South Building GS-321

Lab Sections:

1025Q-001L	Monday	1:25-3:25pm	Sean Oh
1025Q-002L	Monday	3:35-5:35pm	Sean Oh
1025Q-003L	Tuesday	3:35-5:35pm	Tianye Liu
1025Q-004L	Wednesday	1:25-3:25pm	Sean Oh
1025Q-005L	Wednesday	3:35-5:35pm	Tianye Liu
1025Q-006L	Thursday	3:35-5:35pm	Tianye Liu

Required Course Materials

- ◆ **OpenStax Astronomy textbook**, an open educational resource. *Available for free online*, in web-view and PDF format: <https://openstax.org/details/astronomy> (and on our HuskyCT page). If you prefer, a print version is available via the UConn Bookstore.
- ◆ **PHYS1025 Lab Manual** through UConn Bookstore.
- ◆ **Expert TA** online homework system. You will be able to access the online Expert TA homework system through HuskyCT and in the course content folder will be a document with instructions. *You are responsible for having access and submitting the first homework assignment by Friday January 28th at 5pm.*
- ◆ **iClicker mobile software**. We will be using the iClickers mobile software in this course, which can be used while class is remote or when it is in person. Instructions on purchasing and using the iClicker Reef software will be posted in the course content folder of HuskyCT.

Course Objectives

Astronomy is the study of the Universe, with a particular focus on stuff outside the Earth. In this course, you will learn **how we know what we know about the universe** (including modern observations and theories describing our place in the cosmos), **learn about what we don't know**, and **develop the skills** to begin to unravel the mysteries of the universe for yourself (cool, right?). As part of this journey, you will learn **the basics of "how to science:"** hypothesis testing, controlled experiments and observations, plus the nitty-gritty of proposals and resource allocation in science. The focus of this course is *understanding the concepts of astronomy* rather than *memorizing facts*.

The main objectives for the course are:

- 1) Hone and develop your **critical thinking skills** (this is a Q course after all!)
- 2) Develop a **broad understanding and appreciation** for the field of astronomy and the basic nature of our Universe.

- 3) **Have fun.** Science is all about curiosity, exploring, and engaging. Enjoy it!

What to do if you need to miss a class?

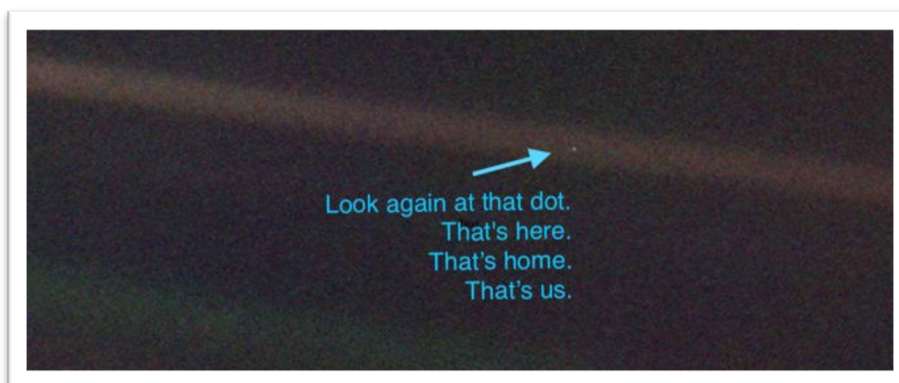
Things happen, and we do not expect that you will be able to attend every class. Clicker questions and in-class quizzes **cannot** be made up, but there is plenty of flexibility built into those scores, that it should be no problem for you to miss a couple of classes. If you do need to miss a class, be sure to:

- 1) Check in with a colleague in the class to find what you missed,
- 2) Read over the content in the textbook, including the assigned pre-class reading,
- 3) Go over the lecture notes, posted on HuskyCT, and
- 4) Ask any questions you have about the content after you've completed the three steps.

You ***do not*** need to email the instructors if you will miss a lecture.

Please follow all University guidance on COVID-19 quarantine procedures and do not come to lecture if you may infect others. For the Spring 2022 semester, I have **increased the number of dropped quizzes and clicker scores, expecting that everyone may require a few extra absences this semester due to possible illness or exposure.** Unless you experience a prolonged absence of more than two weeks, you do not need to let me know that you will be missing class. The quiz and clicker drops are intended for just such an absence! Just do your best to get caught up remotely and let me know if you have any questions.

How to Succeed in this Course



A photograph of our tiny home world, Earth. This photo was taken by the Voyager spacecraft in 1990 from 3.7 billion miles away. The sun's bright rays caused reflections in the camera that you see as the lines across the image. The tiny pixel of light is our entire Earth. This photo was popularized by, and the quote is from, Carl Sagan in his book "Pale Blue Dot: A Vision of the Human Future in Space," and the image is from NASA.

Your success in this class is important to me. We will all need accommodations because we all learn differently. If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we'll develop strategies to meet both your needs and the requirements of the course. Mathematics is the language of science, and success in the course will require some basic proficiency in algebra and trigonometry. Here are some resources if you have questions, need a refresher, or are just feeling a bit overwhelmed:

- ◆ The **UConn Q Center** is an excellent resource (free of charge!) if you need help with math concepts in lab or homework assignments: <http://qcenter.uconn.edu>.

- ◆ The **Physics Learning Resource Center** (free of charge - located in room Gant South S-216 of the physics building -- <https://physics.uconn.edu/academics/undergraduate-program/learning-resource-center/>) is *staffed by experienced physicists*
- ◆ And of course, your professor and TA's office hours!

Other suggestions for how to succeed in this course:

- ◆ **Come to lecture and lab!**
- ◆ **Read before lecture and lab!** The unannounced quizzes will include questions from assigned pre-class readings. Reading the lab manual before lab will help you to efficiently complete the activity within the allotted time.
- ◆ **Come to office hours!**
- ◆ **Plan, ahead**, especially with your final project observing proposal and any planned absences.

Grading and Course Work

This course is designed to reward hard work and in-class participation. Intelligence is fluid and learning to learn is an important component of this class.

Final Projects: Observing Proposals

There are no exams in this course. Instead, 25% of your final grade will be comprised of the final project, a telescope observing proposal (and the associated abstract and panel review), which will be completed in groups formed within your lab sections. These should be your standard lab groups and should generally be 3 people (4 maximum). The final projects will be evaluated in the final week of lab during a panel review, so the deadline (to be announced) is hard, and late projects cannot be accepted.

Many facilities in the US are “open-skies” – this means that the telescopes do not belong to anyone – the best projects are selected by a panel review. Many of the lectures and labs throughout the semester are designed to prepare you to write your own telescope observing proposals; in fact, in one lab, you will practice doing a peer panel review of observing proposals to choose the best projects for the telescope. A proposal abstract will be due midway through the course (*March 4th*), this is designed to give you early feedback on your project, so you have time to adjust as needed. More details about the final proposal and panel review will be given later in the course, but for now, get those gears turning about new observations to explore the Universe!

Labs

Labs are conducted during your specified lab section according to the course schedule.

Please see the separate lab syllabus for details. Participation is required for labs. Your score will be based on a set of questions handed in during the lab. There is a worksheet you will need to print and complete each week.

Policy on Lab Attendance

The general policy of the Department of Physics is that satisfactory completion of the lab is required as part of your course grade. ***Missing more than two lab sessions will result in an automatic grade of F for the entire course. Please see the lab syllabus for full details and COVID make-up policies.***

Any questions pertaining laboratory policies or procedures should be directed to your lab instructor (Sean Oh or Tianye Liu) or the physics teaching lab staff: James Jaconetta (james.jaconetta@uconn.edu) – Lab Technician, Diego Valente (diego.valente@uconn.edu) – Director of Physics Teaching Labs

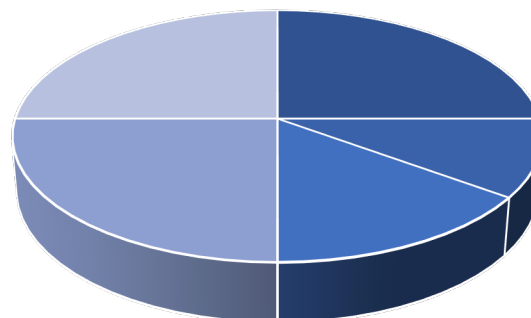
Homework

This course will include approximately 11 online homework assignments, about one per week, through the online Expert TA system through HuskyCT. Detailed instructions on how to register will be given on HuskyCT. **You are responsible for making sure you are registered by the time your first homework is due, Friday January 28th by 5pm.** *We all have lives and things happen, therefore, the lowest two homework scores will be dropped, no questions asked.* **Late homework assignments will lose 20% for the first day late and 10% for each additional day late.**

In-Class Quizzes

There will be approximately 12 short in-class **unannounced** quizzes throughout this course, about 1 per week. The quiz questions will be a mix of short-answer and multiple-choice and will cover material from the lectures and from the assigned readings. *The **three** lowest quiz scores will be dropped.* We will go over quiz answers right away, so **it is not possible to make up any missed quizzes.**

Grade Component	Weight
Online Homework	25%
Clickers	10%
In-class Quizzes	15%
Lab Activities	25%
Final Project: Abstract	5%
Final Project: Proposal	15%
Final Project: Panel Review	5%



- Homework
- Quizzes
- Final Project
- Clickers
- Lab

Grading Scale (%)				
93-100 A	83-86 B	73-76 C	63-66 D	
90-92 A-	80-82 B-	70-72 C-	60-62 D-	
87-89 B+	77-79 C+	67-69 D+	0-59 F	

iClickers

We will be using iClicker cloud mobile software for this course (if you have a physical clicker you prefer to use please email the instructor). The main reason is that education research demonstrates that by *actively engaging* you will learn more (yay!), and hopefully have more fun. You will receive credit for your iClicker use (see distribution above), for both participation (3 pts per question) and for correct answers (1pt per question). Any final clicker score of 70% or higher will earn an “A” (100%), and all scores will be similarly scaled up by **30%. This amount**

has been increased from previous semesters to account for expected additional COVID-19 exposure/illness-related absences!

Here are a few example situations (assuming we have 22 classes with clicker questions and 4 questions per day, but this will vary!) to help understand the clicker grading scheme:

- ◆ If you miss 2 classes, answer every question for classes you attend, but never get one right, your raw score will be 68%, then will be scaled up to a 98%.
- ◆ If you miss 4 classes and get only ½ of the questions correct for the ones you answer, your raw score will be 72%, then will be scaled up to 100%.
- ◆ If you miss 6 classes, but get every question correct, your raw score will be 73%, then will be scaled up to 100%.

This means that if you need to miss a few classes, can't get the software to work, or get some answers wrong– don't sweat it – just consider it one of your many freebies.

The first three classes (Jan. 18, 20, and 25th) will not count for credit with the iClicker, to give us ample time to get everything set up and tested. You are responsible for making sure you are ready to go with your clicker from our fourth class (Jan. 27th) forward. You can check that everything has worked by tracking your daily clicker grades on HuskyCT, these will generally be posted by the morning of the day after class.

You will need to ***purchase the iClicker student app and register your netID on HuskyCT.*** You should have received an email on how to do this. You can make an account here: student.iclicker.com and follow their guidance. In the app profile, enter your netID. You can check that this has worked by tracking your daily clicker grades on HuskyCT.

If you have questions about the use of iClickers or how to register it for this class, please contact iClicker student support learn.iclicker.com/HowCanWeHelp.html, or contact CETL Education Technology at: (860) 486-5052 or edtech@uconn.edu

Night Observing, Astronomy Seminar, and Colloquia Write-up Extra Credit

There will be occasional opportunities for night observing with the UConn Astronomy Association (they are the best!) and also a handful or special astronomy seminar and colloquia throughout the semester.

- ***Night Observing*** will be held at the discretion of the UConn Astronomy Association. **Night observing opportunities will be announced in class.** On HuskyCT announcements, we will post a link to a googledoc sign-up sheet with all the details (time and location) of the night observing and this is also where any announcement of cancellation (e.g. due to poor weather) will be made, usually a few hours ahead of time. There will be extra credit night observing sheets handed out at the session that you can turn in for extra credit (within one week of the night observing session).
- ***Astronomy Seminars and Colloquia for extra credit will be announced in class*** and are on some Wednesdays from 2-3pm and some Fridays at 3:30pm, respectively. **Astronomy seminars and colloquia will be announced in class.** If you attend an astronomy seminar or colloquia, write a short summary of the talk (2 paragraphs), and submit it to the instructors ***within one week of the talk***, you can receive extra credit.

If you attend and do the ***extra credit*** write up for these special events (night observing, an astronomy seminar or colloquia), you can receive 0.5% extra credit toward your final grade for each event, for a ***MAXIMUM*** of 1.5% extra credit (3 events total, any combination) toward your final grade.

Other Extra Credit

There may be up to two additional extra credit opportunities announced during the course of the semester, centered on submitting an original astronomy-themed creative project or submitting an original astronomy-themed meme. The activity during the final class on Thursday, April 28th will provide students with the chance to earn points back to improve their in-class quiz scores. Additionally, the winners of the panel review for each lab section will earn back 10% towards their final project abstract grade.

Lecture and Lab Schedule

Subject to change – daily reading assignments will be given in class.

Dates	Lecture Topics	Reading Chapters	Lab Activity
Jan 18 – 20	Introduction, Scale of the Universe	Syllabus, Ch. 1	No Lab
Jan 25 – 27	The Sky Above, Seasons	2, 4	No Lab
Feb 1 – 3	Phases of the Moon, Planetary Motion	3	Impacts
Feb 8 – 10	Gravity, the Nature of Light	5	Light and Seasons
Feb 15 – 17	EM Radiation, Spectra	5, 6	Cosmic Photoshoot
Feb 22 – 24	Telescopes	6	Spectroscopy
March 1 – 3	Solar System, Stars	7, 16	Telescopes
March 8 – 10	Stars (cont'd)	17,18	Scaling the Solar System
March 15 – 17	Spring Break		
March 22 – 24	Stars, Gas and Dust, Star Formation	19, 20	Judging Science
Mar. 29 – 31	Search for Planets, Life in the Universe	21,30	The Sun
April 5 – 7	Stellar Evolution	22	Exoplanets
April 12 – 14	Stellar Death, Black Holes, relativity	23, 24	No Lab / The Sun (rain date)
April 19 – 21	Milky Way, Galaxies, Galaxy Evolution	25, 28	Make-up Lab: Weighing Black Holes
April 26 – 28	Dark Matter, Big Bang Model	28, 29	Final Project Panel Review

General Rules of Conduct

In all your efforts, we expect that you will work to foster a respectful, welcoming, and inclusive environment. We expect every member of our class to embrace the diversity (including age, background, gender identity and expression, ethnicity, national origin, religious affiliation, sexual orientation, and other visible and non-visible categories) of this classroom as we pursue our shared study of astrophysics. We will be working closely throughout the semester and we expect all students to contribute to a respectful, welcoming, and inclusive environment.

Academic Integrity

Group work is accepted and encouraged for most lab assignments and the final project. Clearly label the names of everyone who contributed to collaborative assignments. **Don't cheat. Not even once, not even a little bit.** Copying someone else's work, letting someone copy yours, seeking or using homework solutions (found online, from a friend, *anywhere*) is cheating. If you are found to be cheating in any way, Prof. Battersby and Mr. Hatchfield will report the incident to Academic Misconduct and recommend failure of the course.

Take responsibility for your learning process and be a part of the community of scholars at UConn. Similarly, plagiarism in any form, meaning the failure to adequately document the source(s) of one's work, is wrong. Both copying and plagiarism violate the UConn Student Code. See Appendix A: Academic Integrity in Undergraduate Education and Research: <http://community.uconn.edu/the-student-code-appendix-a/> Instances of copying or plagiarism will be handled under the guidelines specified in the Student Code (<http://community.uconn.edu/the-student-code-preamble/>). You are responsible for acting in accordance with this code. "I didn't know" is not an excuse.

UConn policies

Policy Against Discrimination, Harassment and Related Interpersonal Violence

The University is committed to maintaining an environment free of discrimination or discriminatory harassment directed toward any person or group within its community – students, employees, or visitors. Academic and professional excellence can flourish only when each member of our community is assured an atmosphere of mutual respect. All members of the University community are responsible for the maintenance of an academic and work environment in which people are free to learn and work without fear of discrimination or discriminatory harassment. In addition, inappropriate amorous relationships can undermine the University's mission when those in positions of authority abuse or appear to abuse their authority. To that end, and in accordance with federal and state law, the University prohibits discrimination and discriminatory harassment, as well as inappropriate amorous relationships, and such behavior will be met with appropriate disciplinary action, up to and including dismissal from the University. Additionally, to protect the campus community, *all non-confidential University employees (including faculty) are required to report sexual assaults, intimate partner violence, and/or stalking involving a student that they witness or are told about to the Office of Institutional Equity.* The University takes all reports with the utmost seriousness. Please be aware that while the information you provide will remain private, it will not be confidential and will be shared with University officials who can help. More information is available at equity.uconn.edu and titleix.uconn.edu.

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know *immediately* so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or <http://csd.uconn.edu/>

Inclement weather and emergency preparedness

In case of inclement weather, a natural disaster, or a campus emergency, the University communicates through email and text message. Students are encouraged to sign up for alerts through <http://alert.uconn.edu>. Students should be aware of emergency procedures, and further information is available through the Office of Emergency Management at <http://publicsafety.uconn.edu/emergency/>