

# AST 1022L: Astronomy Laboratory

## Fall 2021

**Section 11823: Tuesday, Periods 5–6 (Time: 11:45 AM to 1:40 PM)**  
**Room: BRT 7**

**Instructor: Makannah Bristow**

Office: BRT 309A

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Phone: (352) 294-1870

**Office Hours:**

11am-12pm on Mondays and Thursdays

Or by appointment

**Teaching Lab Directors:**

**Dr. Francisco Reyes**

12 Bryant Space Science Center

[freyes@astro.ufl.edu](mailto:freyes@astro.ufl.edu)

(352) 294-1885

**Dr. Paul Sell**

222 Bryant Space Science Center

[psell@ufl.edu](mailto:psell@ufl.edu)

352-294-1867

**Contacting the Instructor by e-mail**

To contact the instructor regarding this class, you must send a message through Canvas.

Do not use your personal e-mail address.

**Physical science (P) statement:**

Physical Science courses provide instruction in the basic concepts, theories and terms of the scientific method in the context of the physical sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern physical systems. Students will formulate empirically-testable hypotheses derived from the study of physical processes, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

**Course objectives and goals:**

AST-1022L Astronomy Laboratory counts for one credit of Physical Science (P) towards the General Education requirement. It introduces students to the scientific method as applied to the field of astronomy. The students are introduced to the process of making astronomical observations, quantitatively analyzing those observations, extracting information about astronomical bodies, and understanding how they work. The students will also be introduced to the process of writing a report on an experiment, which involves communicating the details,

results and conclusions of that experiment to a reader not necessarily familiar with the experiment.

**General Education Student Learning Outcomes (SLOs):**

- Students demonstrate competence in the terminology, concepts, methodologies and theories used within Astronomy.
- Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to Astronomy
- Students analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems.

**Statement Privacy-Related Issues**

Our class sessions may be audio-visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate verbally are agreeing to have their voices recorded.

If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared.

As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

**In-Class Recording:**

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled.

The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited.

Specifically, students may not publish recorded lectures without the written consent of the instructor. A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course.

A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited.

To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services.

A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student.

### **Course meeting times and locations:**

AST 1022L Astronomy Laboratory consists of 11 daytime labs and 3 night labs. Daytime labs will be conducted during the scheduled class period (detailed above) in room 7 of the Bryant Space Science Center. The night labs will take place at the Campus Teaching Observatory (CTO) on nights to be scheduled during the first few weeks of class. You might want to find it in the daytime before the first lab, because absence due to not being able to find the CTO will not be excused. A map to the CTO can be found at <https://astro.ufl.edu/research/telescopes/campus-teaching-observatory/>. Night labs depend on the weather. If the weather turns out to be too bad for a night lab, I will send an email to the class canceling the lab no later than 7 pm on the night of the lab. If you do not get a message, you should come to the CTO at the scheduled time for the lab unless there is bad weather, heavy rain, lightning, thunderstorm or tornado watch or warning. In those cases, the observatory will be closed. If you need assistance finding your way, call the observatory phone number (352) 392-1016 **before** the start of the session. Once the session starts, the instructors will be busy and may not answer the phone.

### **Lab requirements:**

Students will need to bring the following items to all labs:

- Lab Manual: Hands on Astronomy Laboratory Manual is available at Target Copy at 1412 W. University Avenue.
- Writing utensils and extra paper
- Simple scientific calculator
- Basic ruler (inches and centimeters)

A flashlight (preferably with a red filter) may also be helpful for night sessions at the CTO. Additionally, we strongly recommend bringing **insect repellent** to the night labs (there are lots of mosquitoes!).

Food or drinks are not allowed in the laboratory, but you may bring water in a spill-proof container. Cell phones must be off or muted for the duration of class. Students should also refrain from text-messaging.

### **Attendance:**

Attendance is mandatory for ALL labs and will be recorded for each class session. You will not receive credit for labs if you do not participate in data collection. If you miss the introduction to an experiment I reserve the right to disallow your participation in the lab, in which case you will receive no credit for that day's lab. Please contact me **BEFORE** class if you will be absent. Please read the section "**Late and make-up work**" regarding valid reasons to skip a lab.

### **Class work:**

Quizzes: There will be about 11 lab experiments performed in this course. For each lab you will be expected to have read the write up for the day's experiment to prepare before you attend to class session. There will be a short quiz at the beginning of each class (except for the first day). Questions on the quizzes will be taken directly out of the lab write up objective, introduction and procedure text, so please read through the labs carefully before class. If you are late to class, you

will not be given extra time to work on the quiz.

Labs and Assignments: After the introduction and quiz, you will perform the lab experiment and record your data. In most cases you will work with a partner or in a small group, but each student must record their own data sheet. You must have your data sheet initialed by me before you leave. You will be assigned either a worksheet or a formal lab report to complete for each lab. You will be assigned 6 worksheets, one formal lab report, and two double formal lab reports.

You will have one week to complete the assignment, and it will be due at the beginning of the next class. If you are present for the data collection but do not turn in the assigned lab work, you will receive zero credit for that assignment.

Night Labs: There will be three night labs held during the semester outside of the regular class time. Attendance to these labs is mandatory and the worksheets that accompany the lab account for 12% of your grade. *During weeks we hold night labs, the scheduled day lab will still take place. **Night labs do NOT replace the weekly day labs.***

Additional Homework: There will be one homework assignment the first week of class to read a write up “**Math and Science Basics**” and complete the problems assigned by the instructor. This homework will be turned in at the beginning of the second class.

### **Late and make-up work:**

Late Work Policy: Lab reports or worksheets that are turned in the day they are due after the beginning of class will be penalized 10% off. If they are turned in the day after they are due, they will be marked 50% off. Labs turned in more than one day late will not receive any credit.

Make-up Labs: If you missed class unexpectedly, please contact me as soon as possible to discuss turning in the previous week's lab. Make up labs are only an option in serious cases (religious holiday, jury duty, military obligation, University sponsored activity, serious health problems, or emergencies) and require official documentation. If you do not have a legitimate excuse for missing the lab, you will receive no credit for that lab. Please contact me about making up a lab as soon as you know you will miss the lab.

Requirements for class attendance and make-up labs, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

### **Grading:**

Letter grades will then be assigned by the following scale (%):

A = 90 or above	B- = 77 – 79	D+ = 64 – 66
A- = 87 – 89	C+ = 74 – 76	D = 60 – 63
B+ = 84 – 86	C = 70 – 73	D- = 57 – 59
B = 80 – 83	C- = 67 – 69	E = 56 or below

A minimum grade of C is required for a general education credit.

Information about current UF grading policies for assigning grade points can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

The total grade will be weighted as follows:

Worksheet (and answer to the questions) (6)	30%
Formal lab report (1)	10%
Double formal lab reports (2)	30%
Observing Night labs reports (3)	12%
Quizzes	8%
Answers to problems in “Math and Science Basics”	5%
Participation	5%
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Total	100%

Incompletes: The College of Liberal Arts and Sciences has a strict policy on incomplete grades and they are only allowed in very rare circumstances. If at any time you begin to feel you might not be able to complete this course for any reason, do not wait to discuss the matter with myself and/or your academic advisor. The sooner you act the more options you will have available!

#### **Academic integrity:**

Group work is encouraged and often necessary during the completion of the labs in this course. Working with others outside of the lab is also acceptable; however, each student must record their data and complete their lab report on their own, and do their own writing. All UF students are bound to abide by the honor code; you can learn more about the honor code here: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>. Any violation of the student code will mean zero points for the experiment and it may be reported to the Student Conduct and Conflict Resolution.

*Cheating will not be tolerated in this course;* that include: plagiarizing other students’ lab reports, copying of fabricating data for an experiment for which you were absent, plagiarizing contextual information from the lab manual, or copying/paraphrasing online resources without proper citations. If you are unsure whether or not you are violating the honor code, discuss it with me while you still have time to revise your work.

#### **Accommodations:**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodations. Students with disabilities should follow this procedure as early as possible in the semester.

The Disability Resource Center is located at 001 Building 0020 (Reid Hall). I will then be happy to work with you in providing those accommodations.

#### **Course evaluations:**

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

**University resources for counseling and emergencies:**

The University provides counseling and mental health services for enrolled students. You can learn more about these services here: <http://www.counseling.ufl.edu/cwc/Default.aspx> or by calling 352-392-1575. The University Police Department can be reached at 352-392-1111; for emergencies, dial 911.

## AST 1022L: Schedule for Fall Term, 2021

Week of	No.	Activity	Comments	
AUGUST	23	Organize; discuss syllabus Review of math and science basics	Assign homework from Appendix A	
	30	9	Impact Craters	
SEPT	6	1	How Big is the Sun?	Monday Holiday: Labor Day
	13	2	Light is a Wave	
	20	3	The Astronomical Telescope: I	
	27	4	The Astronomical Telescope: II	
OCTOBER	4	5/ 13	The Electronic Camera in Astronomy/Photometry of a Star Cluster	Friday Holiday: Homecoming Computer lab
	11	8	You Can Weigh Jupiter	CLEA lab
	18	6	Astronomical Spectroscopy	
	25	18 /7	The Flow of energy Out of the Sun/What is the Sun made Of?	CLEA lab
NOVEMBER	1	10	Measuring the Hubble Constant	CLEA lab
	8	12	Features of the Moon	Thursday Holiday: Veterans Day
	15		Monday section makeup → Thursday section make up → Friday section makeup →	How Big is the Sun? Features of the Moon E-Camera/photometry
	22		No labs this week (Thanksgiving)	Wednesday, Thursday, and Friday, Holidays
	29		Only makeup labs	
DECEMBER	6		No labs this week. Clean-up period	Classes end Wednesday

### **OBSERVATORY LABS (Night labs at Campus Teaching Observatory, CTO):**

- No. 14. Observe the Moon
- No. 15. Observe the Deep Sky
- No. 16. Observe the Planets

### **OPTIONAL DAY-TIME LAB AT CTO:**

- No. 17. Observe the Sun

**Notes:** Experiment 1 (How Big is the Sun) requires at least a moderately clear sky. If there is a continuous overcast, instructors should be prepared to trade date with an “indoor” lab that does not require a good sky. One of the CLEA labs (Ex.: You Can Weigh Jupiter) may be a good choice, since they do not involve setting up equipment.