

AST 1022L: Astronomy Laboratory

Spring 2025

Course Section, Meeting Time and Location:

Section 11003: Tuesday — Periods 5-6 (11:45 AM - 1:40 PM)
Bryant Space Sciences Center Room 7 (basement level)

Instructor: Wren Heiligenstein

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Office Hours: 1:45 PM - 3:45 PM Wednesday and by appointment

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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.

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.

General Education Student Learning Outcomes (SLOs)

- Students demonstrate competence in the terminology, concepts, methodologies and theories used within Astronomy. These outcomes will be assessed through in-class participation, pre-lab quizzes, assigned worksheets, and formal lab reports.
- Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to Astronomy. These outcomes will be assessed through in-class participation, pre-lab quizzes, assigned worksheets, and formal lab reports.
- Students analyze information carefully and logically from multiple perspectives, using discipline specific methods, and develop reasoned solutions to problems. These outcomes will be assessed through assigned worksheets and formal lab reports.

Night Labs

In addition to the regularly scheduled daytime labs, students will experience hands-on observing at the Campus Teaching Observatory (CTO) during up to three night labs. **Students should find CTO in the daytime before the first lab**, as absence due to not being able to find the CTO will not be excused. A map to CTO can be found at <https://astro.ufl.edu/research/telescopes/campus-teaching-observatory/>.

During weeks we hold night labs, the scheduled day lab will still take place. Night labs do NOT replace the weekly day labs. More information about these labs including days and times will be provided by your instructor early in the semester.

Night labs depend on the weather. Your instructor will keep you updated via Canvas, posting an announcement to the class regarding the open status of CTO no later than 1 hour before the start time. The observatory certainly will be closed in cases of very poor weather: heavy rain, lightning, thunderstorm or tornado watch or warning.

Lab Requirements

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

- Lab Manual: Hands on Astronomy Laboratory Manual (Tenth Edition) is available at Target Copy (1412 W. University Avenue).
- Writing utensils and extra paper
- Scientific calculator

Additionally, we strongly recommend bringing insect repellent to the night labs (there are lots of mosquitoes!).

Food or drinks are strictly not allowed in the laboratory with the exception of 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 your instructor reserves the right to disallow your participation in the lab, in which case you will receive no credit for that day's lab. Please contact your instructor **BEFORE** class if you will be absent. Please read the Late and Make-up Work section regarding valid reasons to skip a lab.

Class work

Quizzes

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 due at the beginning of most classes. 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.

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 your instructor before you leave. You will be assigned a worksheet and/or a formal lab report to complete for each lab. Unless otherwise specified, you will have one week to complete the assignment, it being 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.

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. For every day after the official due date that the work is not turned in, an additional 10% will be deducted. Labs turned in more than eight days late will not receive any credit.

Make-up Labs

Please contact your instructor about making up a lab as soon as you know you will miss the lab. If you do not have a legitimate excuse for missing the lab, you will receive no credit for that lab. Eligibility for make up labs follows the official UF excused absences policy: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Grading

Grading Scale

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 general education credit.

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

Grading Components

The total grade will be calculated according to this weighting:

Worksheets	50%
Formal Lab Reports (2)	30%
Quizzes	12%
Participation	8%
Total	100%

Incompletes

The College of Liberal Arts and Sciences has a strict policy on incomplete grades. 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: <https://sccr.dso.ufl.edu/process/student-conduct-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 includes: plagiarizing other students' lab reports, copying or 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. This includes the use of AI: no student is allowed to use any AI tools (e.g., including Grammarly) to assist with any assignments in this course. Doing so

will be considered a violation of the student honor code. If you are unsure whether or not you are violating the honor code, discuss it with your instructor while you still have time to revise your work.

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.

Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/students/get-started/>) 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). Your instructor 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

- *University Police Department*: The University Police Department can be reached at 352-392-1111; for emergencies, dial 911.
- *Counseling and Wellness Center (CWC)*: The University provides counseling and mental health services for enrolled students. You can learn more about these services here: <http://www.counseling.ufl.edu/> or by calling 352-392-1575.
- *U Matter, We Care*: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit <https://umatter.ufl.edu/> to refer or report a concern and a team member will reach out to the student in distress.
- *Student Health Care Center*: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit <https://shcc.ufl.edu/>.
- *UF Health Shands Emergency Room / Trauma Center*: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; <https://ufhealth.org/emergency-room-trauma-center>.
- *Teaching Center*: Broward Hall, <https://teachingcenter.ufl.edu/> or 352-392-2010 (or 352-392-6420 to make an appointment). General study skills and tutoring

AST 1022L: Schedule for Spring 2025

Week of	Lab	Activity*	Comments/Assignments**	
January	13	0	Syllabus/Math and Science Basics	
	20	1	The Surface of the Sun	Outdoor Observing Required
	27	2	The Atmosphere Of The Sun	Outdoor Observing Preferred
February	3	3	Impact Craters	
	10	4	Light Is A Wave	
	17	5	The Astronomical Telescope I	Formal Lab Report
	24	6	The Astronomical Telescope II	Formal Lab Report
March	3	7	Modern Photometry and Astrometry	
	10	-	Makeup labs	
	17	-	No Labs This Week	Spring Break
	24	8	Astronomical Spectroscopy I	Formal Lab Report
	31	9	Astronomical Spectroscopy II	Formal Lab Report, Computer Lab
April	7	10	Measuring The Hubble Constant	Computer Lab
	14	11	You Can Weigh Jupiter	Computer Lab, Solar Labs backup
	21	-	Makeup labs	
	28	-	No labs this week	No Final Exam

*For each lab you will be expected to have read the write up in your lab manual for that activity and taken the associated quiz due at the beginning of class.

**Unless otherwise specified, you will have one week to complete the assigned worksheets and/or lab manual.

Night Labs on Tuesdays at the Campus Teaching Observatory (CTO):

Lab 12: Observe The Moon

Lab 13: Observe The Planets

Lab 14: Observe The Deep Sky

Your instructor will provide advance notice and additional information regarding these night labs. Each night lab will include an associated worksheet that will need to be turned in at the end of the lab session.