

Astronomy 119 – Astroinformatics, Spring 2025

Instructors:

- S. George Djorgovski [djorgovski]
- Matthew Graham [mjpg]
- Ashish Mahabal [ashish]
- Santiago Lombeyda [santiago]
- Email [name] at Caltech dot edu

Class website: <https://sites.astro.caltech.edu/ay119/>. The website will be updated as the class unfolds.

Weekly discussion sessions (the attendance is *mandatory*): TBD

This is an overview class of various useful data science topics as applied in astronomy, i.e., the Astroinformatics. It is impossible to cover them in depth, but at least you will know what it is about, and be able to follow on and learn more about any topic of particular interest to you.

How it will work:

Each week will be dedicated to a particular topic, as shown on the class website. Links to the video lectures, readings, and exercises will be posted there. The students are *required* to go through the lectures and reading materials prior to the discussion session (see below). It is estimated that this should take between 2 and 3 hours/week.

Each week we will have a 1 hour, in-person discussion, to ask questions, clarify things, etc. Attendance of these sessions is *mandatory*, and it may be helpful for doing the assigned exercises. If for some reason you cannot attend (and the reason has to be justified), there may be an additional quiz.

Assigned exercises (aka homework) have to be turned in by Monday of the following week, by email to that week's instructor; however, we encourage you to do it sooner, while the lectures are fresh in your mind. These should take about 2-3 hours of your time. While in most cases we will provide some suitable data sets, you are welcome to substitute your own data sets, as long as they are appropriate for the exercise in question, but you have to check with the appropriate instructor first.

Grading:

The work described above is sufficient if you are taking the class P/F, if you actively participate in the in-person discussions and do the assignments in a manner indicating that you actually did understand the material.

If, however, you wish to have a letter grade, you will also be required to do a class project. This can be any project that would utilize *at least three* of the topics covered in the class *at a non-trivial level*. We suggest that you do it with your own research project and data, but if not, we will assign one to you. The topic *must be approved by the instructor* no later than May 2, 2025. There will be an interim report due no later than May 16, 2025, and the final report due no later than May 30, 2025. Thus, you will have the last 4 weeks of the class to complete your project.

This project will count for 30% of your final grade. The midterm grades will be based on the work done prior to the midterm week.

Communications:

We will communicate with you using emails provided in the class roll in the REGIS system; let us know if you'd like to use a different one. You can email the appropriate instructor(s) directly and arrange an in-person discussion if needed. If your question is generally relevant, we'll respond to all of you.

Collaboration policy:

We encourage you to collaborate with the other students in the class, but everyone has to turn in their own assignments.

Wellness Policy:

Taking care of your health and well-being should be your number one priority. You cannot learn if you are unwell or under extreme duress. The course work should feel challenging in a positive way, but I do not want you to be overwhelmed by your work for this course.

If you find yourself overwhelmed or encountering other personal challenges during the term, please reach out to the instructor, as well as to the appropriate Dean's Office and the Caltech Wellness Services.

Other:

All participants in this course must be treated with respect by others in accordance with the honor code. If you feel unwelcome or unsafe in any way, we encourage you to talk to us or one of the Deans.

FERPA compliance:

It is against the law to reveal online the identifying information of other students taking the class, and Caltech and you personally may be liable should any problems result from such a disclosure.