

ASTR-1200-01: Stars & Galaxies (Spring 2019) Guidelines for Independent PROJECTS

During the semester, you will get the chance to explore an astronomical topic that we don't have time to cover in depth during class. The choice of topic is entirely up to you. We've listed a number of ideas below, but if you think of something else, that's fine, too. Some details:

- The project accounts for **10% of your course grade**. Please don't put it off until the last minute.
- In Homework 3 (due Wed., February 20), you will write up a short summary of what you intend to do for your project. You're not 100% locked into this idea, but if you decide to change, you must let me know as soon as possible after that.
- In Homework 6 (due Wed., April 10), I'll ask you for an update and progress report. Your idea must be finalized at this point, and we'll be looking for *some* progress to have been made thus far. After all, by that time you will only have two weeks until...
- **All projects are due on Wed., April 24.** Late submissions will be accepted up to one week after the due-date, but will only earn up to 50% credit.

Most of the suggested project ideas (categories A & B below) involve writing an essay of **approximately 1000 words** (2–3 pages single-spaced, or 4–5 pages double-spaced). Your work should draw from—and properly cite—multiple different sources. Wikipedia and our textbook are okay to get you started, but please delve a little deeper as well. For more information on essay-writing and citing sources, see:

- CU Boulder Writing Center: <https://www.colorado.edu/pwr/writing-center>
- A nice guide: http://lasp.colorado.edu/~cranmer/ASTR_1200_2019/edinburgh_writing_guide.pdf
- CU Libraries citation guide: <https://libguides.colorado.edu/strategies/citations>

A. RESEARCH PROJECTS:

1. **Astronomy of a Traditional Culture:** Research the astronomical traditions of an ancient (or modern) culture. Looking at the night sky is a human constant, but most different cultures ascribe different stories and significance to what they see. Many cultures used the sky in different ways for time-keeping, navigation, and spiritual purposes. For example, the Pleiades star cluster was very important to the Inca, and Orion's belt was very important to the ancient Egyptians. Describe what a particular culture saw in the sky and how they used the sky to help in daily life. If possible, describe the cosmology of this culture: How was the universe structured? How did it come into being?
2. **Astronomy in the News:** Astronomical topics often make headline news when a particularly controversial or visually interesting discovery is made. For this assignment, you will locate a feature-length article in a national magazine or a newspaper (you may use topical magazines such as *Sky & Telescope* and *Astronomy*) published any time during the last 3 years. Your source article should be several pages long, and it should explore a topic in some depth. Your paper on this article should include: a summary of the topic, its importance and its relation to the topics covered in class, a discussion of why it was considered newsworthy at publication, discussion (if needed) of whether the article still contains factually correct information (the cutting edge of astronomy does change quickly) and, if needed, a brief update on the topic. You'll also need to cite some external sources for background information.
3. **Astrobites!** astrobites.org is a blog written by astronomy graduate students for undergrads who are interested in, but not necessarily majoring in astronomy. Each blog post summarizes a recently published research paper, along with some background information and links. Your goal is to pick a blog post and write a paper that includes: a summary of the topic—including *how* and *why* the research was performed, its importance and relation to the topics covered in class, and a discussion of how

their results fit in to the “big picture.” You’ll also need to cite some external sources for background information. You can scroll through the recent blog entries or search (🔍) for keywords of interest.

B. JOURNALISM:

1. **Book/Movie Review:** Find an astronomy or space themed novel, short story, poem, or film, and explore how its ideas intersect with our course. A few recent movie classics include *Contact* (1997), *Gravity* (2013), and *Interstellar* (2014). Is the science portrayed correctly? (If not, show what is incorrect, and discuss whether scientific accuracy is important to the story.) Do the characters disagree about consequential topics such as “faith vs. reason,” or “what is truth?” Has this work of art changed your mind about the universe in ways that my boring lectures have not?
 2. **Interview an Expert:** Boulder is an active hub of astronomy and space activity. If you want to talk with one of the world’s experts in some topic—including graduate students and postdocs—we can help get you connected. You should draft up your questions beforehand and record the interview as it happens (with the person’s permission, of course). Your final report should contain: your initial goals, what you hoped to learn, transcript excerpts from the interview itself, a summary of what you did learn, and thoughts about what you might do differently if you were to do this again.
 3. **Historical Profile:** Write an essay about the life, work, and impact of a real astronomer, living or dead. We’re not looking for a litany of accomplishments, but rather a more holistic picture of how their discoveries affected the broader culture and society.
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C. GET CREATIVE...

You can think of this as an “outreach” project in which your goal is to get some segment of the public excited about a given topic in astronomy. Once you choose the topic, feel free to choose the *medium* that you feel best presents it to your intended audience. The sky’s the limit on this one, and the following list is only a subset of possible examples:

- poetry
- board game
- short story
- photography
- watercolor painting
- website or wiki
- short film
- video game
- CGI animation
- interpretive dance
- music video
- comic strip
- stage play
- self-published ‘zine
- puppet show
- knitting or cross-stitch
- original music
- BuzzFeed-style listicle
- songwriting
- lesson plan for kids

In addition to submitting the thing itself, you also need to write a *short* explanatory essay (about 500 words, half the length of the essays for the other types of projects) that explains what you did, why you did it, and how you went about making it.

HONOR CODE: As you already know from the syllabus, the CU Boulder [academic integrity policy](#) needs to be obeyed at all times, and this includes plagiarism. Some other local online guides that go into more detail about what plagiarism is, and how to avoid it, include the [writing guide](#) mentioned above, and a useful site at [CU Denver](#). It’s definitely not worth the risk to your academic career to go down that road.

GRADING: Midway through the semester, we’ll post a rubric for how these projects will be graded. Generally, though, a successful project is *effective* and *compelling*. “Effective” essentially means how clear and understandable (i.e., readable, watchable, listenable, or whatever) your project is, for its intended audience. “Compelling” means complete (i.e., no glaring missing pieces), thoughtful, creative, and honest. Meeting these criteria is a lot easier if you pick a topic of interest to you.