

# Final Project

## *Term Paper & Presentation*

In lieu of a final exam, you will be writing a term paper and giving a short presentation. This accounts for 30% of your total course grade. Points for each component are outlined below.

**You need to select a Final Project Topic, focused on something recent and related to “Galactic Astronomy”.**

This is broadly defined, and could include (but is not limited to):

- A specific component or structure within the Milky Way
- A key method for studying parts of galaxies, especially related techniques we haven’t focused on in this class.
- The composition of a nearby galaxy
- Modeling galaxy formation
- Various forms of “feedback”
- A recent result from a relevant mission or survey
- ... Many other things!

You are welcome to connect this Final Project Topic to your own research or interest areas (I’m happy to be relatively generous with relevance here), but **I insist you learn something new!** In other words: don’t just recycle the intro from your own paper, or cite a bunch of your own work.

If you need ANY help coming up with ideas for what is “interesting”, talk with Jim!

## **Part 1 – Final Project Topic (Due Feb 17th, 5PM PST)**

*5 points*

Submit a 1-page PDF with the following:

- The title of your Final Project topic
- A short paragraph describing the topic/theory you’re going to present, including **citations to at least 2 recent or important references**. Be sure to describe why this topic is interesting (to you or in general). This should be similar to a conference talk abstract. Feel free to include lots of details, but keep it to within a half-page.
- The full References to your 2 (or more) citations. These probably should be published scientific (journal) articles, but I will accept other things if you have a good justification.

**This must be submitted via [Dropbox](#).**

If there are any concerns about the course relevance or subject matter, Jim will follow up to help you adjust the topic for the subsequent parts below.

## Part 2 – Presentation (Tues, Mar 7th & Thurs, Mar 9th)

*20 points*

Give a brief presentation, and answer questions from your peers, summarizing your Final Project Topic. You may choose the format for this presentation:

- A live 7-10 min conference our “journal club” style talk with 3 min of questions (in-person if possible, or via Zoom)
- A pre-recorded 7-10 min video, that we will watch live, with Q/A or discussion after
- Some other format you think of. I’m interested in what *you* think is interesting, so if you have ideas of another way to present material then let me know!

We will break the presentations into 2 days. If you have a strong preference for which day to present, please let me know. **You are expected to attend both sessions to support your classmates!** (As always, let me know if you have a conflict). If we are in a virtual-learning format, these sessions will be held via Zoom.

The purpose of this talk is to A) give the high level background and takeaways from your Final Project Topics for your classmates to benefit from, and B) to practice the art of giving science talks to your peers and asking questions.

Your grade is dependent on both your presentation and audience participation.

- *10 points* for giving your talk.
- *5 points* for attending both days.
- *5 points* for asking at least 1 question each day.
  - Asking Questions is hard, I suggest you take brief notes throughout each talk, jotting down ideas for a Q. Ask reasonable, relevant Q’s to the topic. Intentionally stumping the speaker will only embarrass them and disappoint your instructor....
  - Pro tip: feed a “softball” Q to a classmate for your talk, just in case...
  - Answering questions on the fly is really hard. It’s OK to say you don’t know the answer, try to think through the question and what the answer might be. It’s OK to ask for help!
  - WARNING: if there are NO questions for a speaker, everybody’s grade goes down (i.e. let’s have fun and be nice to each other, don’t leave your colleagues hanging!)

## Part 3 – Term Paper (Due Mar 14th, 5PM PST)

*100 points*

Submit a term paper discussing the 1) background, 2) course relevance, 3) key challenges or developments, 4) important or exciting results, 5) and future opportunities of your Final Project Topic.

The purpose of this assignment is to A) learn a relevant topic at a deeper level, and B) practice the important skills involved in scientific writing. I know writing these can be daunting, but if you put good effort in they can pay off in long-term synthesis and knowledge retention.

- The paper must be written in LaTeX, and use the [AASTeX manuscript](#) class, and submitted as a PDF file. I would recommend using the `modern` or `preprint2` format style.
- You must include citations to at least 5 relevant publications or articles.
- You must include at least 1 figure. This does not have to be an original figure, it can be taken from a reference (think: literature review!) but you must clearly state where the figure is from.
- Text should be written in a professional style, like you were submitting to a peer reviewed journal. This includes using full and complete sentences, having relevant section headings, defining abbreviations, using proper citation styles, referencing figures.
- I suggest a paper length of at least 2500 words (1500 words for ASTR 497C students). This is not a hard requirement, but if you are substantially below this length and you don't satisfy the 5 topic requirements, you will lose points.

**This must be submitted via [Dropbox](#).**