Milestone 3: Presenting your results

In astronomy research, getting cool results is only half the battle – if you don't communicate the science you've done, you might as well not have done it at all! Astronomers present their work in many different ways, from writing papers to presenting at conferences to casual discussions with members of the public. In all cases, being able to communicate your results clearly and effectively is crucial. As an early-career scientist, presenting your work is also one of the best ways to start building your reputation, so you should take every opportunity you can to practice!

Due date: before class on 5/2

Learning objectives

This assignment is designed to help you:

1. **Summarize the key components of a research project**, including background, methods, results, and conclusions.
2. **Organize your research work into a logical narrative**, including visual materials (like slides or figures) that clearly communicate your results.
3. **Communicate complex ideas confidently** at a level that is appropriate for a peer audience, through both written and spoken formats.

Task description

This assignment has two parts: a written abstract and an oral presentation. Please upload both your abstract and your slides/visuals to Courseworks before the deadline. If possible, please upload your slides/visuals in PDF format to ensure I'm able to open them.

Part 1: Abstract

You'll write a scientific abstract summarizing your semester-long project. The abstract should be about 300 words and include the following components:

1. **Background:** A brief introduction to your topic and why it's interesting or important. You should draw on what you learned in your literature review (Milestone 1) here!
2. **Research question:** What specific part of your topic did you investigate?
3. **Methods:** A brief description of what kind of data you used and how you analyzed it.
4. **Results:** A concise summary of your key findings.
5. **Conclusion:** A sentence or two about what your findings suggest and how they relate to the bigger picture.

The abstract should be scientifically accurate, clearly written, and understandable to a scientifically literate peer who may not be familiar with your specific topic. For more help writing an abstract, refer to the lecture materials for *Scientific writing and publication*.

The following rubric will be used to evaluate your abstract:

Criteria	Excellent	Satisfactory	Needs improvement
Introduction	Clearly introduces the topic and poses a relevant, well-defined question.	Topic is introduced and question is present but could be more precise.	Topic or question is unclear or missing.
Methods	Data and methods are succinctly and accurately described.	Basic methods are described but lack some detail or clarity.	Methods are vague, incorrect, or missing.
Results	Key findings are described clearly and concisely.	Some results are presented, but could be clearer.	Results are confusing or missing.
Conclusion	Final sentences articulate a meaningful takeaway or connection to broader context.	Conclusion is present but not clearly tied to results.	Conclusion is unclear or missing.
Writing quality	Well-structured, free of grammar and spelling issues, appropriate length.	Mostly clear but contains some grammar/spelling errors or is not an appropriate length.	Difficult to read due to errors or lack of organization.

Part 2: Oral presentation

During our final class session, you'll give an oral presentation summarizing your semester-long project. You should plan for the presentation to be ~7 minutes long, with 3 minutes for questions. The presentation should cover the following topics:

1. **Introduction and background**: Provide relevant scientific context (again, draw on what you learned in Milestone 1 here) and clearly state your research question or topic.
2. **Methods**: Describe your dataset and what kind of analysis you performed.
3. **Results**: Show your key plots and/or tables and explain what they reveal.
4. **Conclusion**: Summarize what you found and what it means. Optionally, you may include next steps or open questions.

Your accompanying visual materials should be clear, well-organized, and easy to follow. You may use any software you like (Google Slides, PowerPoint, etc) to create these visuals, but please make sure the final product is submitted in a format I'll be able to open (PDF is best).

The following rubric will be used to evaluate your presentation:

Criteria	Excellent	Satisfactory	Needs improvement
Content and organization	Presentation includes all required components. Information is well-structured and easy to follow.	Most elements are present. Organization is generally clear but may have minor gaps or uneven flow.	Key elements are missing or unclear. Presentation lacks coherence.
Interpretation and explanation	You demonstrate strong understanding of the analysis and results. Plots/tables are interpreted accurately and their significance is clearly explained.	Your general understanding is evident, though some explanations lack depth or clarity.	You show limited understanding of results or struggles to explain their meaning.
Delivery	You speak clearly and confidently, maintain appropriate pace, and effectively engage the audience.	Your delivery is mostly clear, with some issues in pacing, clarity, or confidence.	Your delivery is difficult to follow due to lack of clarity, poor pacing, or low engagement.
Visual design	Slides or visuals are well-organized, legible, and enhance understanding of the content.	Visuals are generally clear but may be cluttered, inconsistent, or lack emphasis on key points.	Visuals are hard to read, poorly designed, or missing important elements.