# Information

**Grade**: 25 total points = 9 pts. (part 1) + 19 pts. (part 2)

# Introduction

Your homework sequence should have exposed you to somewhere between 4 and 10 papers on computational biology and bioinformatics research. Your goal in this project will be to take one research paper you previously reported on for your homework present it to the class in two forms. First, you will do a traditional paper presentation (20-30 minutes). Then you will recreate the computational methodology of that paper in R and do a demonstration of your code to the class (20-30 minutes).

# Choosing a paper

See the suggestions and instructions in the homework document. The only additional restriction is that the paper you cover cannot have developed code in R. It may have developed code in any other language ***EXCEPT*** R. That means that the authors of that paper, or anyone else, must not have made R code available for that method on GitHub or anywhere else on the internet.

# Part 1 - Oral Report

**Presentation type**: Oral with visual (e.g., slide) component

**Length**: 20-30 minutes

## Part 1 Rubric

Note that you can organize your presentation however you like. As long as the requirements below are met (in any order, or even split up and included in multiple disparate sections) you can gain a perfect score. Your presentation doesn’t have to follow the order of the rubric (or the order of the paper) to be effective. Also note that style and delivery makes up at least 20% of your grade.

|  |  |
| --- | --- |
|  | **Possible Points** |
| **Title** |  |
| The ***title*** of your talk is the title of the paper you’re presenting | 0\* |
| **Author** |  |
| ***Tell us about the authors***. Who are they, what else have they done and where do they do their research? | 0\* |
| **Background** |  |
| Effectively ***communicate the background information*** necessary to understand the goals of the paper, and their approach to addressing those goals | 1 |
| **Context/Justification** |  |
| Effectively ***communicate the context of the research***. Why was it done, why it is important and what lead up to it | 1.5 |
| **Goals/Hypothesis/Question** |  |
| ***Testable hypothesis, goals, or main questions*** stated clearly and effectively (along with null hypotheses, if any) | 0\* |
| **Methods** |  |
| ***Outline the methodology*** without going into excessive detail but still communicating the basic computational steps. Focus on important points that be pertinent to your second presentation. Explain complex or esoteric concepts in ways that anyone in the biology department could understand (including freshman undergraduates). | 2 |
| **Results & discussion** |  |
| Effectively communicate the ***results and implications*** of the research done using effective visual aids (figures and tables). | 1 |
| ***Link the results to the goals*** stated previously and discuss the statistics that demonstrate efficacy of the findings | 0\* |
| ***Effectively link to course concepts*** (including in other presentations or papers we may have covered together) | 0.5 |
| Provides ***context for results***, including unexpected results | 1 |
| Thoroughly discusses ***possible sources of error*** ***or improvements*** that could be made in future experiments | 0\* |
| **Style and delivery** |  |
| ***Effective and creative visual elements.*** Good use of space (little white space, no unnecessary graphics or text), easy to read (contrasting colors, no red on green, legible sans serif font), high quality images. Visuals should aid in illustrating difficult concepts but not be a replacement for clear explanation. | 1 |
| ***Presentation style engaging and stimulating.*** Keep your audience’s attention by catering to their knowledge level, providing the right level of detail, emphasizing the importance what you are discussing. | 1 |
| Spoken clearly and effectively and presented professionally | 0\* |
| Within the time limits (20-30 minutes), and effectively dealt with questions. | 0\* |
| ***Presentation plagiarized.*** If you don’t know what plagiarism is then ask immediately. You can (and should) copy ***some*** elements from the paper you are presenting. However, do not use their words as your words unless it is a definition, equation/algorithm, or another clearly defined quote. | 00\*\* |
| **TOTAL** | 9 |
| \* Items marked as 0 points will not gain you points but they can LOSE you points (up to -1 pt. for each category). For example, if you gain all positive points (+9) but don’t address any of the categories marked “0” points (-7) you will only earn 2 points total (22%).  \*\* Items marked as 00 will not gain you points but they can LOSE you points (up to -9 pts. for each category). | |

# Part 2 – Code demonstration

**Presentation type**: Oral with dynamic visual component coded in R (RStudio).

**Length**: 20-30 minutes

## Part 2 Rubric

|  |  |
| --- | --- |
|  | **Possible Points** |
| **Title** |  |
| The ***title*** of your talk is the title of the paper you’re presenting or the analysis/method you’re reproducing | 0\* |
| **Background** |  |
| Briefly and effectively remind us about what your paper was about, it’s context and why its important | 1 |
| **Existing tools** |  |
| Show the tools that already exist for the method/analysis you chose. Very briefly show us what the input and output look like and how it works. | 0\* |
| **Outline** |  |
| ***Give an outline*** of how you approach recreating the analysis/method in R and what you will talk about for your remaining time | 0\* |
| **Demonstration** |  |
| Slowly walk us through ***your recreation of the analysis/methods***. Show us thecode you wrote, and what it does. It’s ok if you weren’t able to reproduce the entire analysis! It’s ok if you couldn’t get all (or most) of your code to run to completion or at all. The better your code works the more likely you are to get full points here but you can get full points without completely working code. | 10 |
| Tell us what ***problems you encountered*** and how you dealt with them. If your code doesn’t work tell us how you could make it work and what that would look like. | 5 |
| **Style and delivery** |  |
| ***Effective visual elements.*** Text formatted well, plots/figures/graphics constructed using attractive formatting (not default base-R), easy to read code and text (well commented, appropriate use of indentation and spacing). Visuals should aid in illustrating difficult concepts but not be a replacement for clear explanation. | 3 |
| ***Presentation style engaging and stimulating*** | 1 |
| ***Effectively formatted in R.*** You can present an HTML document, PDF, slides or any other document that is written and formatted in R. | 00\*\* |
| Spoken clearly and effectively and presented professionally | 0\* |
| Within the time limits (20-30 minutes), and effectively dealt with questions. | 0\* |
| ***Code plagiarized*** from someone else’s R code. You are allowed to take pieces of R code (with citation) other people have written but not a whole analysis/method. You are allowed to copy an entire method from another coding language into R but only if you translate it yourself. If you are unsure if what you are doing is plagiarism then ask Dr. Evangelista. | 00\*\* |
| **TOTAL** | 9 |
| \* Items marked as 0 points will not gain you points but they can LOSE you points (up to -1 pt. for each category).  \*\* Items marked as 00 will not gain you points but they can LOSE you points (up to -10 pts. For each category. | |