BIO247 – Final Project

# Description

In place of a final exam, students will complete a final project, alone or in pairs, applying the methods of the course to a biology topic of their choice. Students will have the option to recreate an existing analysis while adding new insights, or to perform new exploratory data analysis (EDA) on relevant data. Students will need to find sufficient data and tools from either online databases or published research.

# Student Learning Outcomes

* Explain how intermediate data and metadata from Exploratory Data Analysis can help scientists make decisions about disease or ecosystem treatment
* Use public databases to find relevant, verified biological data
* Search for and identify peer-reviewed literature which provides relevant answers or data for research questions
* Apply the data tools of bioinformatics to other fields or subspecialties
* Express summaries of data analysis with effective visualization
* Design and implement a bioinformatics project to answer a question using available open-source data and tools
* Prepare and communicate feedback on computational methods

# Project Breakdown & Rubric

Proposal (due Monday 17 October) – 25 pts

This will be a formal written report, outlining your area of study and your proposed project. You should begin with a brief introduction of the topic, and the knowledge gaps in the area of study. You’ll then outline your proposed project, and how it will address this knowledge gap. You should include the data you will use in your project, your planned analysis, and any tools you’ll be using. Max 5 pages, not including references.

Poster (due Monday 21 November) – 50 pts

You will create an academic poster, to be presented at the December 6 poster session in the Rossin Ballroom. This poster should include an introduction, methods, results, and conclusion. When creating your poster, you should think about the most effective use of space. Generally, posters are accompanied by a “2-minute talk” to introduce your work, and then interested audience members will ask further questions.

Note: Some presenters have started using QR codes to link to their full reference list to save space.

Debug Report (due Tuesday 29 November) – 50 pts

Part of your project will involve having your classmates debug your analysis – that is, you should have your classmates try to recreate parts of your analysis you make sure that your work is reproducible. This is where having a repository for your project could really come in handy!

After debugging, you will assemble a short write-up describing 1) whose work you debugged and what the outcome was and 2) the outcome of debugging your own work. Max 2 pages.

Project Reflection (due Monday 5 December) – 25 pts

Throughout your project, you’re likely going to have to make changes, based on the outcome of your analysis, data availability, coding bugs, time constraints, etc. You’ll also likely come to some conclusions about the topic you’ve been working on, and you may find that there is further work to be done.

You will write a reflection on the work you completed for your project – what you learned, what problems you encountered, and what you believe the final outcome of your project is. Max 3 pages.

You also submit either: a summary of the tools you used for your project, or the code you wrote to perform your analysis (depending on which is applicable).