Rubric: Data Analysis, Conclusions & Final Presentation

Learning Goals: You should be able to present using visually exciting, logical and literate means the project including relevance, rationale and the scientific background as well as the basis and results of your hypothesis, and its predictions illustrating the gaps in knowledge the results of appropriate experiments will fill. . As a result of appropriate data analysis the student should be able to make evidence based conclusions and relate them to the predictions made in the proposal, providing support or refutation for appropriate aspects of their hypothesis *Clearly demonstrate how the data collected leads to evidence based conclusions that explore the hypothesis. The presentation should use appropriate, verbal, visual or written media to communicate with a variety of audiences.*

Criterion	Exemplory-Excellent	Feedback for student
Title of the presentation	Title informative, related to big picture and gives information re the approaches to be taken	
Introduction and outline of presentation	Logical layout of the presentation	
Relevance and Scientific background for the project. Introduces the model system to be studied	Able to articulate the relevance of the project, indicating what basic (or fundamental), applied, or societal issues their research will address. should know the relevant published background to their project including the context and relevance of the model system they have chosen, and any relevant unpublished preliminary work (theirs or others in their research group). They should be aware of, and be able to use available data (eg informatics data)	
Identifies gaps in knowledge the project is intended to fill	Using prior knowledge, they should be able to indicate what gaps in knowledge exist that their project will address.	
Gives a brief overview of the hypothesis and its predictions and how the presented experiments give rise to appropriate data	Articulate a testable, falsifiable hypothesis that makes predictions that their research will address. They should be able to identify what they will measure to support or disprove their hypothesis, and how they will measure it. They should include discussion of control experiments and clearly indicates dependent and independent variables and addresses issues of other variables that must be considered	
For each experiment can relate how the data was collected and analyzed and is aware of technical and theoretical limitations of the experiment. Clearly and logically presents experimental data in graphs and tables appropriately labeled etc	Clearly indicates how the data is analyzed to give as appropriate meta data, indicating any equations used to derive appropriate parameters and their error etc Uses appropriate ways to display the data indicating what must be compared to appropriately test the hypothesis and how the significance of the comparison will. be established	
Uses appropriate models to analyze data and calculate parameters. Discusses error and reproducibility for all data presented	Discusses how agreement or differences between experimental results is estimated and the degree of confidence in similarities or differences established	
Appropriately indicates and can discuss the confidence in data comparisons and can draw appropriate conclusions	For all experiments discusses reproducibility of the data (multiple samples etc) collected. Identifies key experiments and reproduces the entire experiment. Clearly indicates which experiments give critical data for the overall interpretation and discusses overall internal consistencies or inconsistencies in the project	
Can appropriately tailor the above points to written, visual(poster) or oral (talk) presentations and can express concepts, approaches, data and conclusions to novice or expert audiences as appropriate. Can answers appropriate questions	The presentation can be made in different formats, oral (everything from the brief elevator talk to a 30 minute seminar presentation), visual (posters), and written (a final report of the work to a draft of a manuscript to be submitted for publication). But contains all the above points in an audience suitable manner and the presenter can answer audience questions in a thoughtful and appropriate way.	

Designed by Dawn Marin, David Hecht & Ellis Bell