

Before asking me questions, please read this document several times.

1 Expectations and Organization

Goal. My goal with this project is to provide an authentic learning experience with real data, real life questions, real life conditions with access to a computer, discussion with peers to make decisions and time and deadlines (like in any real job). It is my hope that this experience will contribute to greater motivation and enhanced understanding of the material and of the usefulness of statistics. My other goal is to reduce the weight of time-limited in-class exams in final course grades.

Overview. The biological questions and data are described below. You will analyze these data making your own choices as a group and write up your results as a group. You will then critically assess the strengths and weaknesses of 2 other group reports. Finally, I will ask you to provide feedback on this experience to help me determine how I should redesign group projects in the future.

Groups. I will assign groups of 3 at random for several reasons. First, to maximize diversity within groups. I believe that group learning is best when group members complement each other. Second, some people can get a fresh start when placed in a new group. Groups will be formed within discussion sections, to make it easier for teammates to meet with each other, after discussion for instance. Some discussion time might be used for group meetings. Group dynamic could also benefit from discussions on homework problems.

How to get help. You should be discussing your project within your group only. Your work may not be shared with other groups. Different groups will be assigned different sets of data. You are encouraged to get help from your TA and myself. We are here to provide guidance and technical help with regards to statistical computing, but we will not solve the problem for you.

Individual contributions to the group work. At the end, every group member should own the final report: every single member should be able to explain the choices made and the techniques used in every single part of the report. Group members might divide the work by questions (with 9 questions there could be 3 per group member), but here it is possible to divide the work by proteins because each group will have 20 different proteins to work on (each group member could take the responsibility for 6 or 7 proteins). How the work is divided is up to you. However, if one person takes the responsibility for one question, this person must also take the responsibility that the other group members understand and could replicate the work. Each group member will estimate his/her own contribution (in %) as well as his/her teammates contributions and turn in form B along with the report.

Critical review. Each group will critically evaluate the reports from 2 other groups chosen at random from a different discussion section, so that your own report will be evaluated by 2 different groups (outside your discussion). The group will need to meet to read and discuss the strengths and weaknesses of the 2 reports. Based on this, group members will discuss what they would change in their own report if they had to re-do the work. Finally, they will decide on a score for each of the 2 projects they evaluated. A scoring and critical review sheet is provided (form C) for this evaluation, to be turned in by May 8th.

Along with evaluation of reports, each group member will fill in an evaluation questionnaire (form D), whose purpose is to improve the group work experience for future students. This questionnaire should be turned in as a group.

Grading. The final grade for each student will be determined by the 2 group review scores (provided by peers), the self-estimated student contribution (provided by all group members), and the number of intermediate drafts returned on time (an empty intermediate draft does not count). If the 2 group scores differ by 10 points (out of 60) or less, I will use the average of the 2 scores. If these 2 scores differ by more than 10 points, I will review the report in detail and use a value between the 2 scores. The number of intermediate drafts returned on time will count for an additional 6 points, with 1 point for each draft returned on time. If, in addition, one student seems to have contributed significantly less than the other group members, I may give this student a lower final grade than to his/her teammates. I might ask this student to meet with me to evaluate his/her understanding and contribution to the project to assign an individual grade. If a group does not turn in its two scoring sheets (form C), then the grade of each group member will be divided by 2.

Schedule and Intermediate drafts.

Deadline	Week	Task
T Jan 31	2	Groups are assigned: get your group number and member names on Learn@UW, meet your teammates in discussion.
T Feb 7	3	Intermediate draft 1 due (planning)
T Feb 14	4	Intermediate draft 2 due (data displays)
T Feb 28	6	Intermediate draft 3 due (number of 'significant' patterns out of 20)
T Mar 20	8	Intermediate draft 4 due (proteins associated with hibernation)
T Mar 27	10	Intermediate draft 5 due (experimental design)
T Apr 17	12	Intermediate draft 6 due (pattern of missing data)
T May 1	14	Final report due at the beginning of lecture (3 copies). Participation sheet (form B) due. End of lecture: pick up the 2 reports your group needs to evaluate.
T May 8	15	Scoring sheets (form C, one for each of the 2 reports you scored), and evaluation questionnaire (form D) due.

Expectations for the final report. Your report should be typed with a word processor and have no more than 12 pages. Tables, figures, equations and computer output should be **integrated into the text** so that, for example, a figure useful in a given discussion appears on the same page as that discussion. It will be fine to "cut and paste", or write equations by hand. Graphs should have a legend, legible axis labels, etc. Labels or colors can be added manually. When a statistical test is used, the test name should be mentioned along with the degree of freedom, test statistic and associated p-value (or confidence interval). The null hypothesis should be stated clearly or made clear from the concluding statement. The cover page (form A) should include your group number but **may not include your names**. This is to allow for a blinded review, i.e. more fairness.

What if... one of your team member drops the course late in the semester? This is rare, but it happens once in a while. You should be in a group of 3 so that you can continue the work as a group of 2. In that case, you may reduce your analysis to 14 proteins instead of 20. It would be most helpful if any team member thinking of dropping the course would share his/her concerns with teammates as early as the concerns arise.