Biostatistical Analysis:
Biology 373
Fall 2016 Syllabus & Calendar

Professor: *Brian Leung*
Stewart, W6/14
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Teaching Assistants

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Lectures: Monday and Wednesday, 10:35-11:25 am: Trottier Building 0100.

Labs: STBIO (Stewart Biology) N4/17, Tues 11:35AM-1:25PM, Wed 1:35PM-3:25PM, Thurs 12:35-2:25PM *(GO TO YOUR LAB SECTION ONLY)*

Textbook (required): Zar, J.H. 2009. Biostatistical Analysis, 5th ed. Prentice Hall.
Available at the McGill bookstore:

Assessment:

Lab assignments – 25% of final grade
Class assignments – 20% of final grade
Final – 55% of final grade

Class Schedule: ***Subject to change depending on daily progress.***

Date	Topic	Section in Zar*	Lab
Sept 2	Course introduction; Introduction to data presentation	1	*No labs*
Sept 5	**HOLIDAY: NO CLASS**		
Sept 7	Populations and samples; Pseudoreplication; Central tendency and variability	2, 3, 4.1–4.6	

Sept 12	Introduction to probability	5, 24.1	1. Presentation & summary statistics
Sept 14	Normal distribution	6.1–6.2	
Sept 19	Introduction to hypothesis testing	6.3–6.6	2. Probabilities in a normal distribution
Sept 21	One-sample hypotheses	7.1–7.6	
Sept 26	Two-sample hypotheses: the *t*-test	8.1–8.5	3. One-sample hypotheses
Sept 28	Non-parametric statistics: Mann-Whitney; Data transformation	8.10–8.11; 13	
Oct 3	Paired-sample hypotheses	9.1–9.5	4. Two-sample hypotheses
Oct 5	BRIAN AT WORKSHOP: NO CLASS		
Oct 10	**HOLIDAY: NO CLASS**		
Oct 12	Multi-sample hypotheses: single-factor ANOVA	10.1	
Oct 17	Power, sample size, and assumptions in ANOVA; Non-parametric ANOVA: Kruskal-Wallis test	10.3–10.4	5.Single-factor ANOVA
Oct 19	Multiple comparisons	11.1–11.3, 11.5	
Oct 24	Two-Factor ANOVA with equal replication	12.1	6. Multiple comparisons
Oct 26	Two-Factor ANOVA: Theory and multiple comparisons	12.2, 12.5	
Oct 31	ANOVA Extensions: Two-Factor ANOVA without replication; Randomized block; Repeated measures	12.3–12.4	7. Two-factor ANOVA
Nov 2	ANOVA Extensions: Nested ANOVA, Split-plot ANOVA	15.1, 16.1-16.2	
Nov 7	Linear Regression	17.1–17.2, 17.9–17.11	8. Repeated measures
Nov 9	Linear Regression: Hypothesis testing	17.3–17.6; 19.1-19.3,19.5, 19.9	
Nov 14	Multiple Regression	18.4, 20.1 -20.6, 21	9. Regression and correlation

Nov 16	Multiple Regression Extensions : Polynomial Regression, ANCOVA		
Nov 22	Goodness of fit: Chi-square	22.1–22.6	10. Comparing regressions
Nov 24	Contingency tables	23.1, 23.3	
Nov 28	Advanced topics		11. Chi-square testing
Nov 30	Advanced topics		
Dec 2	Review		
Dec 7-20	Final Exam, Date & Time TBA		

Comments and Advice:

*For any chapter sub-sections indicated above (e.g., 4.1 – 4.6), you should also read the introduction to that chapter

The final exam is CLOSED-BOOK. You will be allowed only non-programmable calculators, writing implements, and a (non-electronic) translation dictionary. You will be provided a sheet of equations.

You may not be able to get credit for this course and other statistics courses. Be sure to check the Course Overlap section under Faculty Degree Requirements in the Arts or Science section of the Calendar.

Standard policies for labs include the following.

(a) You should always attend your specific lab section.

(b) You must do the lab on your own. You can work in small groups to understand concepts but you must perform the analyses yourself and write up your own lab report.

(c) Lab assignments are due at the START of your lab period, one week after the lab is handed out (except when stated otherwise).

(d) Late labs will be penalized 15 percentage points if they are handed in after the above deadline - but within 24 hours (i.e,. if you get 80% of the possible marks, your grade will be 65%). An additional 15 percentage points will be taken off for each subsequent 24 hour period that the assignment is late. Possible exceptions will be made only for students with doctor's note.

(e) If you cannot attend the lab period that an assignment is due, make arrangements with your TA to hand it in BEFORE it is due. Do NOT hand in your lab assignments to your professor. He will not accept them.

(f) If you know you are going to be absent for an extended period of time (family obligations, scientific conference, etc.), you must contact your TA at least FOUR days before the assignment is due to make alternative arrangements. In such cases, TAs will consider requests to hand assignments in late without penalty – but no later than one week after the original due date.

Apart from the above standard lab policies, each lab is run independently by your TA. Policies set forth by your TA should be followed. If you have a question about your lab (the assignment or your grade) always ask your TA first. If your TA cannot resolve the problem, then you can ask the professor.

And remember:

“McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see http://www.mcgill.ca/integrity for more information).”

« L'université McGill attache une haute importance à l honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site http://www.mcgill.ca/integrity). »