

Department of Statistics  
University of Wisconsin, Madison  
Spring Semester, 2008

Stat 371-2:  
Introductory Applied Statistics for the Life Sciences

<b>Class hours:</b>	TR 11:00am-12:15pm
<b>Classroom:</b>	B371 Chem
<b>Instructor:</b>	Sündüz Keleş, Ph.D.
<b>Office:</b>	1245B MSC
<b>Email:</b>	keles@stat.wisc.edu.
<b>Course website:</b>	<a href="http://www.stat.wisc.edu/courses/st371-keles">http://www.stat.wisc.edu/courses/st371-keles</a>
<b>Office hours:</b>	W 5:15-6:15pm; R 3:45-4:45pm
<b>TA (321, 322, 323):</b>	Jingci Meng
<b>TA email (321, 322, 323):</b>	mengj@stat.wisc.edu
<b>TA office (321, 322, 323):</b>	1245D MSC (Medical Sciences Center)
<b>TA office hours:</b>	To be announced.
<b>TA (324, 325, 326):</b>	Quoc Tan Tran
<b>TA email (324, 325, 326):</b>	tran@stat.wisc.edu
<b>TA office (324, 325, 326):</b>	B248J MSC (Medical Sciences Center)
<b>TA office hours:</b>	M 4:00-5:00pm; F 4:00-5:00pm.
<b>Discussions:</b>	T 1:20pm (321); T 4:00pm (322); W 8:50am (323); W 12:05pm (324); W 8:50am (325); W 4:35pm (326)
<b>Course email list:</b>	stat371-2-s08@lists.wisc.edu

**Description.** The aim of this course is to provide undergraduate students in the life sciences with an introduction to modern statistical practice. Topics include: exploratory data analysis, probability and random variables; one-sample testing and confidence intervals, role of assumptions, sample size determination, two-sample inference; basic ideas in experimental design, analysis of variance, linear regression, goodness-of fit.

**Prerequisites.** Math 112 & 113 or Math 114 or equivalent.

**Required text.** *Statistics for the Life Sciences*, by Samuels and Witmer (3rd edition). A substantial portion of the text will be covered. There may be some material presented in the lectures that is not included in the text. You will be responsible for everything covered in the lectures.

**Computing.** For some homework assignments, we will make use of the freely available software R. R runs under Windows, Macs, and Linux, and is available in several public computer labs on campus. I encourage all of you to get access to R as quickly as possible. If you have your own computer, download the appropriate version of R from CRAN (<http://www.r-project.org>), otherwise check it out on one of the public computer labs on campus.

**Course website.** I will maintain an active website for this course. This website will serve for several purposes:

- **Announcements:** All the lecture, homework, and exam related announcements that I make in the class will be posted under the **announcements** link. If you have a question regarding the course, lecture, assignments, exams or any other course related stuff, you *should* first check

the announcements website before emailing me. If your question is not already answered on this site, you can then email me. Make sure to hit the reload button on your browser every time you check this link.

- **Homework:** Homework assignments and solutions will either be posted here or will be available via a link to TAs websites. The TAs will grade the homework assignments. If you have a question on the homework, *you should email it to the TA and also cc me.*
- **Handouts:** I will occasionally post handouts here.

**Grading.** Grading is composed of the following:

- **Homework assignments (15%).**
  - There will be weekly homework assignments, consisting of exercises from the textbook or other sources. Some assignments will require the use of the R software. However, use of the computer will constitute a relatively small portion of the course and all information you need to use R will be provided to you.
  - Presentation of the homework solutions is important, they should be organized and readable. The TAs will have to grade 150 homeworks in a week so they will not have much time to try to figure out what you exactly meant. You need to show all your work neatly to get credit.
  - Homeworks will be assigned on a Tuesday and they will be due in class the following Tuesday.
  - Late homework assignments will be **NOT** be accepted and there will be no exceptions to this. Please do not email me or the TAs to request extensions on the assignments.
  - There will be a total of 11 assignments. Best 10 of these will contribute to your grade. This means that you are allowed to skip one of the assignments. I encourage you to save this for your emergencies which, in my experience, tends to happen later in the semester.
- **Midterm exam I (25%).** An in class midterm exam is scheduled on March 4, 2008 Tuesday during the regular class time. Midterms will be open book but NOT open notes. You will need to have your own calculator during the midterm.
- **Midterm exam II (25%).** An in class exam is scheduled on April 8, 2008 Tuesday during the regular class time.
- **Final exam (35%).** The final exam is scheduled on May 13, 2008 Tuesday at 2:45pm.
- There will NOT be a make up exam for either the midterms or the finals. If you have a legitimate conflict (i.e., you are on one of the athletic teams and you need to be away during the scheduled exam) with the exam dates, you have to notify me at least 1 week before the exam and you have to take the exam before the actual date.
- The grades will be based on the four items outlined above (homework assignments, midterms and finals). There will be no exceptions to this.
- I encourage you to take advantage of the office hours, both mine and the TAs, for more clarification and help on homework assignments.

**Academic Honesty.** You are allowed to talk to each other, your TA or me about homework. However, every student should write up his/her homework solution independently. It is absolutely not acceptable for one student to write a solution for another student to copy. On exams, your work is to be entirely your own.

## Tentative syllabus

Week	Date	Topic
1	January 22, T January 24, R	Introduction. Exploratory data analysis, Ch-2
2	January 29, T January 31, R	Exploratory data analysis, Ch-2. Exploratory data analysis, Ch-2. Hmw 1.
	February 5, T February 7, R	Probability, Ch-3. Binomial distribution, Ch-3. Hmw 2.
4	February 12, T February 14, R	Normal distribution, Ch-4. Sampling distribution, Ch-5. Hmw 3.
5	February 19, T February 21, R	One-sample testing, Ch-6. One-sample testing, Ch-6. Hmw 4.
6	February 26, T February 28, R	One-sample testing, Ch-6. One-sample testing, Ch-6.
7	March 4, T March 6, R	<b>Midterm-I</b> (Chapters 2-6) Two-sample comparisons, Ch-7. Hmw 5.
8	March 11, T March 13, R	Two-sample comparisons, Ch-7. Statistical Principle of design, Ch-8. Hmw 6.
9	March 18-20,	SPRING RECESS
10	March 25, T March 27, R	Statistical Principle of design, Ch-8. Comparison of paired samples, Ch-9. Hmw 7.
11	April 1, T April 3, R	Analysis of categorical data, Ch-10. Analysis of categorical data, Ch-10.
12	April 8, T April 10, R	<b>Midterm-II.</b> (Chapters 7 - 10) Analysis of variance, Ch-11. Hmw 8.
13	April 15, T April 17, R	Analysis of variance, Ch-11. Analysis of variance, Ch-11. Hmw 9.
14	April 22, T April 24, R	Analysis of variance, Ch-11. Analysis of variance, Ch-11. Hmw 10.
15	April 29, T May 1, R	Regression, Ch-12. Regression, Ch-12. Hmw 11.
16	May 6, T May 8, R	Regression, Ch-12. Regression, Ch-12.
17	May 13, T	<b>Final Exam</b>