

## BISC 305: Statistics for the Biological Sciences

Lectures: TTh 11:00-12:20 AM

Room: GFS118

Discussion: MW 1:00-1:50 PM

Room: RRI 301

### Instructors

Professor Liang Chen  
RRI 416E

Phone: (213) 740-2143

Email: liang.chen@usc.edu

OH: T1:00-3:00

Professor Peter Ralph  
RRI 404C

Phone: (213) 740-2404

Email: pralph@usc.edu

OH: T 1:00-3:00

### Teaching Assistant

Yang Lu

RRI416J

Phone: (213) 880-9843

Email: ylu465@usc.edu

OH: F9:00-11:00

### Course Content

Statistics for the Biological Sciences is an introductory course in statistics addressed to students in the life sciences. Its goals are to illustrate how statistical reasoning is used in biological science and medicine. The students will learn how to carry out simple statistical analyses and to interpret the results. The course uses real data from the biological sciences.

### Textbook

*Statistics for the Life Sciences* by M.L. Samuels, J.A. Witmer and A. Schaffner. Prentice Hall, 5th Edition.

### Grading

There are two mid-term examinations (20% each), a quiz each Thursday (15%), and a final examination (35%). All examinations will occur as scheduled below: there will be no make-up examinations. Note particularly that university regulations strictly regulate the final examination date and time. In addition, there will be homework assignments (10%). Homework submitted for grading is to be the independent work of each individual student. Final Exam: December 15, 8am-10am.

	<b>BISC305</b>	<b>Statistics for the Biological Sciences</b>	
	<b>Date</b>	<b>Topic</b>	<b>Lecturer</b>
Wk. 1	8/25/15	Introduction. Chapter 1, 1-26	LC
	8/26/15	Description of Samples and Populations. Chapter 2, 27-39	LC
Wk. 2	9/1/15	Description of Samples and Populations. Chapter 2, 40-59	LC
	9/3/15	Description of Samples and Populations. Chapter 2, 59-67	LC
Wk. 3	9/8/15	Description of Samples and Populations. Chapter 2, 68-82, Probability and the Binomial Distribution. Chapter 3, 83-87	LC
	9/10/15	Probability and the Binomial Distribution. Chapter 3, 88-98	LC

Wk. 4	9/15/15 9/17/15	Probability and the Binomial Distribution. Chapter 3, 99-115 The Normal Distribution. Chapter 4, 122-133	LC LC
Wk. 5	9/22/15 9/24/15	The Normal Distribution. Chapter 4, 133-140 Sampling Distribution. Chapter 5, 146-159 Confidence Intervals. Chapter 6, 171-193	LC LC
Wk. 6	9/29/15 10/1/15	Confidence Intervals. Chapter 6, 193-208,211-222 <b>First Midterm</b>	LC LC
Wk. 7	10/6/15 10/8/15	Comparing of Two Independent Samples. Chapter 7, 223-240 Comparing of Two Independent Samples. Chapter 7, 241-249	LC LC
Wk. 8	10/13/15 10/15/15	Association and causation, one-side t-test. Chapter 7, 250-267 Statistical significance, hypothesis testing principles, Chapter 7, 268-275	PR PR
Wk. 9	10/20/15 10/22/15	Statistical significance, hypothesis testing principles, Chapter 7, 281-290 The Wilcoxon-Mann-Whiney test, Chapter 7, 291-306	PR PR
Wk. 10	10/27/15 10/29/15	Paired sample t-test and confidence interval, Chapter 8, 307-318 Paired sample signed test, Chapter 8, 325-337	PR PR
Wk. 11	11/3/15 11/5/15	Categorical data, estimation of proportion, Chapter 355-365 Categorical data, goodness-of-fit, Chapter 9, 368-382	PR PR
Wk. 12	11/10/15 11/12/15	Categorical data, relationships, Chapter 10, 383-401, 407-412 <b>Second Midterm</b>	PR PR
Wk. 13	11/17/15 11/19/15	Many Samples, ANOVA, Chapter 11, 442-454 Many samples, one and two-way ANOVA, Chapter 11, 455-465, 478-487	PR PR
Wk. 14	11/24/15 11/26/15	Regression, correlation, Chapter 12, 511-524 THANKSGIVING	PR PR
Wk. 15	12/ 1/15 12/ 3/15	Regression, linear model, Chapter 12, 525-536 Regression, linear model guidelines, Chapter 12, 537-560	PR PR
	12/15/14	<b>Final Exam</b> 8am –10am	PR