Syllabus: EXST7005 - Statistical Techniques I

Fall 2017

Instructor: Dr. Bin Li

Office: 173 Woodin Hall **Email**: bli@lsu.edu

Office Hours: Tu/Th 9:50-10:20AM (or by appointment) **Phone**: (225) 578-1343

Lecture: Tu and Th from 10:30AM-11:50AM in Room 244, Lockett Hall.

Lab Instructor: Shilin Wang

Office: Room 31, Woodin Hall **Email**: swang36@lsu.edu

Office Hours: Tuesday 3-4PM (or by appointment) **Phone:** (225) 578- 8351

Lab: W 11:00AM-12:50PM in Room 44 Woodin Hall

Grading Points:	Two midterm exams at 100 points each	200
	One final exam at 150 points	150
	Weekly lab assignments at 150 points total	150
	Total	500

Exam Schedule:	First Exam	In class, Oct 10 (Tu)
	Second Exam	In class, Nov 16 (Th)
	Final Exam	3PM-5PM, Dec 8 (**Friday**)
Final Score:	(Exam 1 + Exam 2 + Lab + Final) / 5	
Letter grad:	Guaranteed minimum letter grade	
	90-100 points, minimum grade of	A
	80-89.9 points	B
	70-79.9 points	C
	60-69.9 points	D

Course Description

EXST7005 is data analysis course designed for graduate students from a wide variety of fields of study. The aim of this course is to introduce basic concepts of statistical models and sampling; descriptive and inferential methods; normal, *t*, chi-square, and *F* distributions; tests of hypothesis and estimation, analysis of variance, correlation, regression, analysis of categorical data with emphasis on social and behavioral sciences research problems. We use SAS software in the lab, although no previous statistical computing experience is required for this course.

Handouts: The course package can be purchased in LSU Barnes & Noble bookstore. The address is 2 Union Square, Baton Rouge, LA 70803. The phone number is (225) 578-5137. The website is: http://lsu.bncollege.com/

A recommended (but not required) reference book is: Rudolph J. Freund and William J. Wilson. *Statistical Methods*, (2^{nd} Ed. Acceptable; 3^{rd} Ed. preferred), Academic Press, N.Y.

Website: http://statweb.lsu.edu/faculty/li/teach/exst7005/

Important announcements and lab materials will be posted on the above course website.

Important Dates:

August 29:	Final date for dropping without '**W**'.
August 30	Final date for adding course.
September 4:	Labor day
October 19-20	Fall holiday:
November 3:	Final date for dropping courses
November 22-24	Thanksgiving holiday (start at 12:30PM on Nov 22)
December 2:	Last day of class.

Tentative lecture schedule:

Week	Tuesday	Thursday
Week 1 Aug 21 -25	Introduction & Graphic summary of data	Numerical summary of data
Week 2 Aug 28-Sep 1	Density and normal distribution.	Probability
Week 3 Sep 4- 8	Random variable and towards statistical inference	Discrete distributions & Binomial distribution
Week 4 Sep 11- 15	Binomial distribution Sampling distribution of mean	Sampling distribution of mean Confidence interval
Week 5 Sep 18- 22	Hypothesis testing I (basic concepts & one sample z-test)	Hypothesis testing II (Two-sample z-test)
Week 6 Sep 25- 29	Power calculation. Distribution of variances	Distribution of variances One-sample t-test
Week 7 Oct 2 - 6	One-sample t-test Two-sample t-test I	**Review**
Week 8 Oct 9 - 13	**Exam I**	Two-sample t-test II
Week 9 Oct 16 - 20	Paired t-test	**Fall holiday**
Week 10 Oct 23 – 27	Inference of proportion	Design and sampling
Week 11 Oct 30 – Nov 3	ANOVA (Part I)	ANOVA (Part II)
Week 12 Nov 6 - 10	Linear regression I	Linear regression II
Week 13 Nov 13 - 17	. **Review**	**Exam II**
Week 14 Nov 20 - 24	Categorical data analysis	**Thanksgiving holiday**
Week 15 Nov27 – Dec1	Nonparametric and randomization tests*	**Review**
Exam Week Dec 4-8	**Dec 8 (Friday) 3PM-5PM Final Exam**	

Tentative lab schedule:

Week	**Wednesday** (11AM-12:50PM in Rm. 11 Woodin Hall)
Week 1 Aug 21 -25	Lab 1
Week 2 Aug 28-Sep 1	**Lab cancelled due to Storm Harvey**
Week 3 Sep 4- 8	Lab 2
Week 4 Sep 11- 15	Lab 3
Week 5 Sep 18- 22	Lab 4
Week 6 Sep 25- 29	Lab5
Week 7 Oct 2 - 6	Lab 6
Week 8 Oct 9 - 13	Lab 7
Week 9 Oct 16 - 20	Lab 8
Week 10 Oct 23 – 27	Lab 9
Week 11 Oct 30 – Nov 3	Lab 10
Week 12 Nov 6 - 10	Lab 11
Week 13 Nov 13 - 17	**No lab (prepare Exam II)**
Week 14 Nov 20 - 24	**Thanksgiving holiday**
Week 15 Nov27 – Dec1	Lab 12